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ABSTRACT

Trends that will influence Kentucky's future were examined along with policy options for responding to those trends. According to the analysis, the effects of the new economy on Kentucky has been mixed. Although many Kentuckians have benefited from the new economy, the state's least educated and poorest residents are falling further behind the rest of the nation. The inequalities in the areas of income and access to information technology are especially significant. Kentucky has recognized that education is the key to closing these gaps. Access to health care and Kentucky's increasing elderly population are additional areas of concern. Kentucky policymakers will need to devote special attention to the following areas: (1) reducing income inequalities; (2) closing the digital divide; (3) plugging health care gaps; (4) investing in people, especially by increasing investments in early childhood, K-12, postsecondary, and adult education; (5) building social capital; and (6) managing demographic change. (Fifty-three tables/figures are included. Discussions of the following items are appended: income inequality; computer and network usage; selected variables examined in a 2000 survey of 3,000 Kentucky high school students; factors affecting the probability of school attendance; and background information and sample characteristics from a survey completed by 962 Kentuckians aged 45 and older.) (MN)

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CHALLENGES FOR THE NEW CENTURY

Trends that will influence Kentucky's future

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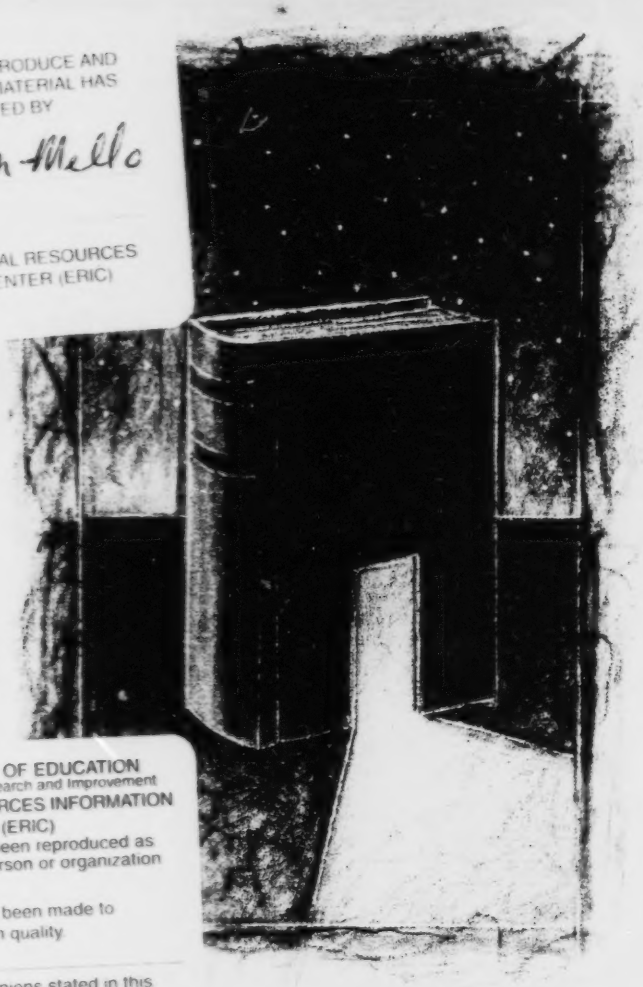

By Michal Smith-Mello, Michael T. Childress, Amy Watts and John F. Watkins

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PREFACE

As part of its mission to advise and inform the Governor, the General Assembly, and the public, the Kentucky Long-Term Policy Research Center presents the 2000 biennial trends report, the fourth in this series. In accordance with the statutory requirements of the Center, this report is designed to inform policymakers and citizens about trends that are likely to influence the future of the state. From policymakers at every level to ordinary citizens of the Commonwealth, all who are interested in and concerned about the future of the state may find this report of interest.

The authors of this report are *Michal Smith-Mello*, a Senior Policy Analyst with the Kentucky Long-Term Policy Research Center; *Michael T. Childress*, Executive Director of the Center; and *Amy Watts*, a Policy Analyst with the Center. *John F. Watkins* is an Associate Professor in the Department of Geography and the Director of Graduate Studies in Gerontology for the Sanders-Brown Center on Aging at the University of Kentucky.

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LONG-TERM POLICY RESEARCH CENTER

The Kentucky Long-Term Policy Research Center was created by the General Assembly in 1992 to bring a broader context to the decisionmaking process. The Center's mission is to illuminate the long-range implications of current policies, emerging issues, and trends influencing the Commonwealth's future. The Center has a responsibility to identify and study issues of long-term significance to the Commonwealth and to serve as a mechanism for coordinating resources and groups to focus on long-range planning.

Michael T. Childress serves as the executive director of the Kentucky Long-Term Policy Research Center. Those interested in further information about the Center should contact his office directly at:

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SUMMARY

A New World Dawns

The vista before Kentuckians in the first year of the new millennium is a bright one indeed. By a host of measures, the state is better off than it has been for years, and it has prospects for an even better future. In the closing years of the last century, the U.S. economy accelerated at a rate previously thought impossible, at least without spurring a bout of crippling inflation. With the acceleration came jobs, and with the jobs came income—and spending, further fueling what many now regard as a super-heated economy. The only constant of the last five years has been change: change in products, business methods and in the roster of businesses in the marketplace. Not all survived, but others rose to take the place of those that did not.

Perhaps the most remarkable phenomenon of the past decade is the maturing of the e-business or commerce that depends on information technology. No longer an interesting curiosity or an emerging capability, information technology has woven itself into the very fabric of businesses, from how they analyze their markets, to how they communicate with their customers and sales staff, to how they order supplies, to how they monitor inventories and shipments. The confluence of hardware, software and communications technology has made possible business practices not even dreamed of only 20 years ago. Just-in-time delivery is routine, and so is the transmission of sales information from the cash register to the supplier in another country. And this may be only the beginning, as businesses begin to increase their electronic links with each other and carry out commerce over the worldwide web.

The ripples of the shock wave made by the New Economy are spreading far, changing businesses in ways fundamental and revolutionary. The old pyramidal, hierarchical business structure is starting to crumble under the pressure of efficiencies achieved by the networked organization. Efficiencies gained by more accurate and rapid transmission of information are slashing costs and boosting bottom lines. Machines are doing the routine jobs that only a few years ago were done by people.

But far from being a threat to workers, the New Economy has ignited the demand for labor. The jobless rate has plunged to record lows, and businesses find that one of their principal challenges is finding—and keeping—workers. Recent college graduates and workers at fast-food restaurants are being offered signing bonuses, and employers are providing a range of benefits to keep their workforces happy and in place.

One of the reasons for the expanded economy is the global marketplace that has developed. Small and large firms alike can do business anywhere. Global

trade is no longer the exclusive venue of the large multinational firm. Even modestly sized businesses, the "Mom and Pops," can sell wares or services globally thanks to information technology, the Internet, and reliable shippers. Falling trade barriers have made it easier to do business internationally, and this process should continue as more nations seek entry into the world economy.

The expanding economy has benefited a lot of people, but none more so than the educated. Education has long been the passport into the upper income echelons, but the New Economy has made the gap in earning power between those with an education and those without even more apparent. What's more, the fastest growing segment of the economy—the one that offers the greatest rewards—tends to require higher education: computer systems engineers, database administrators, computer support personnel are all high-skill jobs that tend to require education beyond the baccalaureate. Those with only a high school degree find themselves shackled to low-skill jobs paying low wages. And the worst news is that they are not even holding their own, because the income earned by the under- or uneducated has declined in real terms since the early 1960s.

How Kentucky Has Fared

But what has the New Economy meant for Kentucky? Has it participated in its benefits the way that other states have, or has the wave of prosperity that has crashed across the United States somehow bypassed the Commonwealth? The report is mixed. The number of jobs in Kentucky has increased over the past two decades, in part as a result of increased foreign investment. On a jobs-per-hundred-people basis, it has done better than both the region and the nation; however, overall jobs growth rate has lagged both. But still jobs have increased as have the wages. While Kentucky still falls below the nation in terms of per capita income, it is closing the gap. The results of globalization have also been mixed here. Some jobs—most notably those in the apparel industry—have left, transferred overseas to take advantage of cheap labor. These transfers represent thousands of lost jobs and have hit some communities especially hard. However, there have been positive results as well. Exports from Kentucky have increased, more than doubling between 1992 and 1998. The manufacturing, agriculture and mining industries all benefited. And Kentucky is not simply depending on traditional businesses to help its economic status. Its business leaders are taking concrete steps to become and stay competitive in the world's marketplace. The number of Kentucky businesses that have met ISO 9000 standards, which facilitates global sales by showing that a firm has met rigorous quality standards, has increased sevenfold since 1994.

While Kentucky has participated in the New Economy and benefited from doing so, the state faces some real barriers to making the transition to a fuller participation in the economic benefits of a technology-driven economy. The state has more poor and undereducated than do many others, and these problems have to be addressed. Furthermore, many in the state come from a background that prizes physical labor—doing rather than thinking. Thus, any transition to a knowledge-based economy has to break down cultural as well as educational barriers. And then there is the inherent structure of the state's economy, which in many ways

remains tethered to the past. Many Kentuckians make their living in the manufacturing, farming, and mining industries—far more so than in the United States as a whole. The types of jobs in these industries are among the most vulnerable to such forces as automation and productivity increases. And tobacco farming, long a state stalwart, faces the twin challenges of a burgeoning assault on the cigarette manufacturers and increased competition from overseas growers. The state also has other types of farms and, indeed, ranks high in the nation on number of farms (fourth in 1997). However, the number of farms and the overall acreage devoted to farming are decreasing. At the same time, the size of individual farms is increasing along with the dollar value of farm exports. But while the trend has some positive aspects, it also means that the number of people who make their living as farmers will likely decline.

Farming is not the only endangered occupation. Mining also faces problems, particularly coal mining. The latter is one of the industries predicted to lose the most jobs over the next eight years. It has already lost a lot of jobs, declining by almost three quarters from 1979 to 2000. While Kentucky still has a lot of coal to mine, it is increasingly difficult to reach, and the economic sense of mining the remaining stores will be in doubt.

Some Are Left Behind

The state's determined efforts to prepare its citizens for and move its businesses to the New Economy bode well for many. But as bright as Kentucky's picture is, it has dark corners and shadows. Even where the New Economy has helped, its blessings have been bestowed unequally. Many inequalities persist in Kentucky, and two seem particularly important: income and access to information technology. These two gaps combine to curtail opportunities for those on the bottom side of the divide.

The Income Gap

While many in the state are prospering, the poorest are falling further behind. The gap between those at the 75th income percentile and those at the 25th (the upper and lower middle classes) is large and growing larger. At the national level, the gap between the two has grown from about 2.5 (i.e., those at the higher percentile earn 2.5 times as much as those at the lower) to about 3.0. Kentucky has generally tracked the national trend, except more recently the divide here has grown wider, rising to about 3.1.

What accounts for the growing gap? Explanations point to several interrelated causes. One source would seem to be the rising returns that accrue to skill and education. In a state with a higher portion of undereducated citizens, this translates to lower wages that grow more slowly than those paid to skilled workers. Another source is the structural changes in the labor market that have robbed workers of bargaining power. And technological growth and globalization have conspired to drive a wage wedge between high- and low-skill jobs. Even demographics may play a role. Kentucky has seen more of its women enter the workforce than the

rest of the nation, and this occurred at a time when the number of men working was declining. Since women tend to earn less than men, the result was an overall decline in income for Kentucky families. A trend toward smaller households, many headed by a single person, often a woman, exaggerates these effects.

The Digital Divide

Once a novelty, computer literacy is approaching the status of a core skill, and the ones developing that skill tend to be the more affluent. This situation should not surprise. Although computers have declined dramatically in price, they remain beyond the reach of many. On average the families in Kentucky have less access to computers at home than do others across the nation, 45 percent for Kentucky compared with 50 percent nationwide. However, the situation is considerably worse for the lower income families. Only 11 percent of the households with incomes below $15,000, which includes a lot of Kentucky families, had access to the Internet in 2000. This lack of access exacerbates the already wide divide between the haves and have nots. The latter have less access to information, from how to obtain goods and services, to medical information, to financial advice, to comparative pricing of important purchases such as homes, appliances and automobiles. Worse, the lack of computer fluency may keep them out of higher paying jobs.

Analyses of survey data from across the state show access to computers and the Internet divides on the basis of income, education, race and age. Simply put, if you are poor, uneducated, a minority, or older, you are far less likely to have access to computers or network services. The difference varies by category, but by way of illustration, the higher income groups are almost three times as likely to have a computer at home and use network services than lower income groups. The good news is that while there are substantial differences between groups with regard to access and use, these differences have been shrinking.

Closing the Opportunity Gap

Kentucky has recognized that education is the key to closing these gaps, and its leaders have translated that recognition into concrete action: committing dollars to programs that can help citizens of the state get an education. The state legislature has increased the funding for merit-based scholarships, while also increasing the funding for needs-based assistance. The total for both programs in the 2000-2001 budget exceeds $70 million, placing Kentucky well above the average for such assistance.

These programs are crucial because our review of the educational data shows that a substantial gap exists in Kentucky. For those in the 15- to 24-year age group, about three quarters of those in the highest income quartile are likely to be attending school compared with less than half of those in the lowest quartile. Interestingly enough, women are more likely to be in school than men in either income group. Both differences are larger for Kentucky than they are for the nation.

Most people know that college tuition has substantially outpaced inflation. However, perhaps less well known is the effect that the high cost of tuition has on the perceptions of would-be students. Poor and low-income parents do not believe

they can afford to send their children to college, and they pass these attitudes on to their children. For example, the majority of the top-scoring students from the lowest income category do not plan to go to college because they do not think they can afford it or because they are needed to help support their families.

The Health Care Gap

One of the most discussed issues of the recent decades is the number of Americans without health care. This occurs in spite of the fact that the country spends more on health care than any nation in the world, that policymakers at the state and national level have lavished attention on the problem, and that health care ranks at the top of the concerns of most citizens. Recently, one result of the longest-running economic boom in the nation's history has been a decline in the number of Americans without health insurance. The percentage of Americans without insurance declined by about 1 percent. The tight labor market has prompted many employers to offer health benefits to attract workers. Based on the best data available, Kentucky's uninsured population falls slightly below the national average.

Unfortunately, health care costs appear to be increasing, climbing more than 7 percent this year and projected to increase to 12 percent in 2001. This rate of increase, which dwarfs that of inflation, is linked to increased cost of prescription drugs and new medical technologies. Drug companies have successfully marketed their products to the public, which has put pressure on their medical providers to prescribe drugs. As a result, insurers have become less willing to shoulder the full cost of drugs, and restricted formularies and higher co-payments have resulted. Also, the aging population is putting additional pressure on the system.

Managed care, which was seen as one way to moderate the spiraling prices, has not proven effective at reining in costs. A number of health management organizations have run into increasing financial problems, causing some of them to jettison seniors from the Medicare+Choice plans. The projected cost increases are a real cause for concern. If they materialize, they may price many of the small firms out of providing health care benefits. Other employers may shift an increasing share of the cost of health care to the employees. Those who will suffer most will be the ones in low-income jobs and the poor.

Managing the Needs of an Aging Population

The populations in the nation and in Kentucky are changing. The classic population pyramid of a base of young people and increasingly smaller segments of older generations no longer exists. Instead, the pyramid has a bulge in the middle, reflecting the post-World War II fertility explosion. Kentucky has a slightly larger older population than does the nation, but the projections are for that gap to widen as the elderly portion of the population increases in size. By 2025, some estimates are for the population 65 years and older to increase to 21 percent for Kentucky and over 18 percent for the nation.

This increase in the elder population has important implications. This population depends heavily on three programs: Medicare, Medicaid, and Social Security.

If policies remain constant, spending on these programs is likely to grow substantially faster than the economy over the next few decades. The cost increases occur because the Baby Boomers will retire in large numbers, driving up the costs of Social Security and Medicare. Furthermore, they are expected to live longer, and thus draw benefits for a longer time. Finally, the cost of health care is expected to go up. At the same time, tax revenues are anticipated to decline.

It is likely that the state will have to carry a significant part of the burden for this aging population. A substantial portion of Medicaid costs go for nursing home care, and the state pays a significant portion of these costs. Furthermore, Kentucky will have a larger elderly population than many states, so its costs will be proportionately higher. We already know that many of the state's elderly depend exclusively on Social Security and Medicare for income and health care.

The issues raised by a graying population transcend those of Medicare, Medicaid and Social Security, important as those are. The implications spill over into such areas as transportation, housing, and a myriad of services the aging population will need and demand. If the state will have to carry a larger share of the load and the resources available to do so are likely to decline, how will Kentucky manage this issue?

A concerted effort to increase the state's social capital may be the answer. Social capital refers to the attitudes and social norms within a community, the feelings that inspire communities—as distinct from governments—to solve problems. Social capital emanates from a strong sense of community. Volunteerism is but one manifestation of it. Some argue that such capital is on the wane in the United States. If true, it could make the problem of dealing with a large elderly population insurmountable.

But by many indications, Kentucky has a large store of social capital, and, furthermore, it can be nurtured. The extent of social capital in the state can be seen in the number of people who feel safe in their communities (the vast majority), the number who feel there are a lot of people they can rely on in time of need (more than five for most), the percentage that volunteer (60 percent), and the percentage that trusts other people (57 percent). Thus, the state has a reservoir of strength that can be tapped to address some of its most knotty problems.

What to Do?

The outlines of what needs to be done to move the state closer to the broad-based prosperity that all wish for are relatively clear. Information technology may not be the only part of the picture, but it is a large one. Taking advantage of it means more education for Kentuckians, breaking the tethers to those industries that no longer offer the promise they once did, and increasing the number of e-businesses and enhancing the electronic component of traditional businesses.

Indeed, the state's leadership has not been idle. It has instituted an aggressive program to improve the quality of education and moved to bolster the entrepreneurial structure. It has also provided a series of recommendations for the legislature to review. And the Governor has appointed a Commissioner of the Office of

the New Economy to help bring focus to the efforts to expand the digital economy.

But more remains to be done. The persistent inequalities described here remain. Policy options and other actions are needed to reduce income inequality, close the digital divide, plug the gaps in health care, invest in our best resource—our people, build social capital, and manage the coming demographic challenge.

Reducing Income Inequalities

Probably the most important step that can be taken here has already been taken: recognizing that quality education will lift people out of poverty. The state's efforts in this regard will help reduce the income gap, but the results will not appear quickly. These efforts are properly focused to yield results over the long term. However, some near-term options are available at the state and federal levels and should be pursued. These include more inclusive health care, higher unemployment payments, expanded earned income tax credits, increased subsidies for child care and housing, and tax cuts that increase the amount of money low-income workers take home.

Closing the Digital Divide

If this divide is to be closed—and it should be—formidable issues need to be addressed. Those who would most benefit from access to information technology are the least likely to have it. Further, while today's information infrastructure may be adequate for today's needs, it will not meet tomorrow's. Literacy—information and computer—remains a stumbling block for many, a problem exacerbated by the fact that many of those lacking the necessary literacy also lack the financial resources to help overcome it. The General Assembly created a task force to address these and other issues, and it recommends that we:

- ⇨ *Grant a one-time individual tax credit for a home computer purchase*
- ⇨ *Promote awareness of information technology benefits and train citizens to use it, particularly the Internet*
- ⇨ *Promote an advanced communications structure.*

Plugging Health Care Gaps

It is in the long-term interest of the Commonwealth to meet the health needs of its citizens. Better health care is a smart investment, because a healthier population is more productive and experiences fewer serious illnesses, which tend to be expensive to treat. Policy options to plug the gaps in health care include:

- ⇨ *Provide tools for informed decisionmaking.* Information is key to making good decisions; the state needs both the authority and resources to gather it.
- ⇨ *Recognize the limits of insurance reform.* Insurance reform alone will not extend access to health care to the working poor and others who do not have health insurance.
- ⇨ *Expand resources for health care.* While citizens must agree to provide it, expanding health care coverage will simply require additional resources.
- ⇨ *Enroll those who are eligible for Medicaid and expand the eligibility.* The state has enjoyed considerable success in this area, bringing heath care cover-

age to an additional 65,000 children. But under more inclusive rules, more could fit under the umbrella if the state would commit the necessary funds.

⇨ *Contain costs*. Cost controls will be needed. Without them the issue may well be maintaining the services we have rather than expanding coverage.

⇨ *Focus on population health*. Such a focus promises large dividends in improved health for large numbers of people. Options here include investment to assist health departments carry out their roles and unifying public, private and nonprofit agencies in their efforts to promote healthy behaviors.

Investing in People

The key here is straightforward: education, education, education, in early childhood, K-12, postsecondary and for adults. The General Assembly has already focused considerable attention here, but more work remains. Education has to become more affordable. The state has programs in place to assist with the former, but having programs is only part of the puzzle. Making people aware of them and encouraging their participation in them are equally important. A large population of high-school dropouts, adults who cannot read, and disadvantaged children will inevitably impose widespread social consequences.

Building Social Capital

We believe that civil society is robust in Kentucky. Yet it could be stronger, and the two keys to strengthening it are leader development programs and, as always, funding. Were they structured to include nontraditional leaders, a cross-section of people from different walks of life, racial and ethnic groups, age brackets, and economic circumstances, the state's leadership development programs and the impact they have could be improved. Furthermore, creation of a social capital fund could help finance entrepreneurs and civic projects.

Managing the Demographic Challenge

The challenge of an aging population is marching inexorably toward us. It is not a question of whether we have to deal with it, only when. Sooner is better. We need to start now to find ways to keep our older citizens engaged, finding ways to keep them involved in the labor force and participating in civic affairs. They have much to offer, and we can help ourselves by helping them. But government alone cannot meet the needs of society. We also must work to forge public-private partnerships as a way of complementing public resources.

Thus, while the promise of the new millennium is great, the problems remain many. But Kentucky has the wherewithal to address them. However, it will not just happen. It will take creative leaders, dedicated civil servants, and a concerned and committed populace. Fortunately, Kentucky has all three.

ACKNOWLEDGMENTS

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INTRODUCTION

This, our fourth biennial trends report, like its predecessors, anticipates what may lie ahead for Kentucky based on the trends manifesting themselves in our daily lives. But this year is unlike any we will ever know again. It marks the beginning of a new century, one that has begun momentously with extraordinary, technological and scientific breakthroughs occurring almost daily, and a brand new economy giving rise to remarkable, if guarded optimism. Though we still face enormous obstacles and a long climb to broad-based prosperity in Kentucky, we are on an upward trajectory in virtually every social and economic arena, toward higher incomes, reduced poverty, stable income inequality, rising educational achievement, and expanded opportunity. The painful losses of the 1980s are finally being reversed. We are growing and working and prospering. But we still face challenges.

A central question that remains is whether we can move our state's economy ahead fast enough to enable more citizens to capture a greater share of the promise of the future. Poverty and undereducation are still very much with us in these best of times, and a potentially detrimental divide between the rich and the poor remains significant here in Kentucky. Indeed, it is one of the widest in the country. Many families, particularly those headed by single women, work and yet remain poor. Likewise, many would-be learners and entrepreneurs cannot afford the very information technology and communications tools that would enable them to participate fully in the prosperity most of us are enjoying. And the world's most expensive health care system remains inaccessible to many working poor and chronically ill citizens. Many social, economic, and political theorists believe these inequalities in what we regard as the fundamentally American opportunity to build a better life could undermine the future all of us hope for.

Our technology-driven New Economy is moving at unaccustomed speed and raising expectations. Whether the product is an idea or the wings that give it flight, more is expected of the maker, the builder, and the buyer or user. In every arena, from the intellectual to the commercial, we are all expected to bring far more to the table than we were just a few short years ago and to make decisions that were once made for us. Whether we embrace or reject learning has everything to do with how well each of us, our families, and our communities will fare in the coming years. Likewise, the extent to which we let the wealth of information readily available to us shape and guide public policy will determine the destiny of our state.

While our economy races forward at Net speed, a great many of us are slowing down as we approach our senior years. The largest generation in U.S. history is nearing retirement, and the question of whether our state and our nation will be

enriched by its wealth of talent and ability or be impoverished by the cost of caring for it remains unanswered. Kentucky's older population, which is disproportionately poor and expected to be larger than in many states, is likely to create many unanticipated fiscal demands at the state as well as the federal level. How we prepare for and respond to this challenge as individuals, as a commonwealth, and as a nation will determine whether this will be an era of triumph or defeat.

The central challenge that all policymakers face is not only that of sustaining the growth we have been privileged to enjoy these past few years but also spreading its benefits to citizens at every economic level. Doing so will be particularly important here in the Commonwealth, where many rural economies are still waiting for the miracle to arrive and many vulnerable populations continue to face economic hardships. To achieve the widely shared goal of expanded prosperity throughout the Commonwealth, it will be necessary to build the educational foundation the New Economy demands and encourage entrepreneurship with the same enthusiasm we bring to industrial locations and relocations. Otherwise, the stubborn problems that keep close company with poverty may continue to frustrate our state's advancement in the early decades of the century. What's more, the challenge of expanding opportunity is likely to be made more difficult by demographic and social changes that will challenge our best-laid plans.

KENTUCKY AND THE NEW ECONOMY

In the old economy that dominated the 20th century, profits and productivity gains depended on making more and more of the same thing. Large numbers of production workers were needed to undertake relatively routine tasks. Those workers did not, in general, require much education. In the new economy of the 21st century, by contrast, businesses depend largely on innovation. To stay competitive, they have to generate products and services that are better or cheaper than those of their rivals, and they must innovate faster than their rivals. Thus, demand is growing for people who can spur innovation by identifying and solving new problems or figuring out what clients and customers might need or want.

—Robert Reich, 2000

When the long-heralded benefits of information technology finally took hold in the second half of the 1990s, the performance of the U.S. economy began to defy prevailing economic theory and grow at a rate previously thought implausible, if not impossible. Joblessness dipped to record lows and consumer prices, with the notable exception of housing,[1] health care, and energy, remained in check. After a prolonged bout of stagnation, wages began to inch upwards in the latter half of the 1990s. Broadened labor force participation, rising income, and, to an unknown extent, the so-called "new wealth effect" of enormous profits from stock market investments bolstered consumer confidence and unleashed spending, which advanced at the highest annual rate since 1983 in the first quarter of 2000, further fueling economic growth.[2] Though the New Economy began to sputter in mid-2000 and a number of late-year indices suggested an economic slowdown or even an imminent recession, the end of this period of growth remained nowhere in sight.

Regardless of its next turn, the pace of change in today's economy is so rapid that writing about this whirling dervish poses the risk of making assertions that are outmoded by the time they appear in print. Indeed, a principal source of economic growth is what has come to be called "dynamism" or near-constant innovations in products and services that "churn" the marketplace, giving rise to new firms and jobs while others fade and die. The more notable survivors number among the nation's 350,000 "gazelle" firms, those with 20 percent annual growth for four consecutive years; these high-growth wonders have produced three quarters of all net

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[1] The consumer price index considers only the cost of rental property in its calculations, a point of some contention. The cost of real estate, which consumes a considerable portion of family budgets, has risen at a cost above the inflation rate.

[2] "Revised Quarterly G.D.P. Stirs New Concern on Rates," *New York Times on the Web* 30 June 2000, 30 June 2000 <http://www.nytimes.com/library/financial/063000econom-gdp.html>.

new jobs.[3] Remarkably, one analysis finds that a high number of business closures correlates positively with economic and employment growth.[4] In this era of change and adaptation, it appears far better to keep sending batters to the plate than to rely on any one Sammy Sosa.

Within firms and institutions—including government at every level—"creative destruction," the ability to shed old practices, embrace the new, and adapt to the dramatic changes taking place, has been key.[5] Organizational change has played a significant role in propelling the economy at light speed. In workplaces, public, private, and nonprofit, new ways of working have enabled employers to capture the same or greater efficiencies with streamlined, highly participatory workforces that often work in teams. Frontline employees are now routinely looked to for ideas that can enable firms and businesses to gain a competitive edge through innovation, the hallmark of truly successful enterprises in today's economy. Some unknown portion of the amazing gains in productivity (the ratio of outputs or benefits to inputs or costs) is no doubt attributable to these changes. Employees now consistently do more with less, which makes the future of old jobs uncertain, but heralds opportunity for the creation of new ones.

The as yet unanswered question about the direction of Kentucky's economy here is how much prosperity it will enable citizens of the Commonwealth to reap over the long term. Like most states, ours is enjoying many fruits of the buoyant national economy. Signs of our improving economic circumstances abound, from the crowded parking lots of shopping malls to the new businesses and whole subdivisions that seem to sprout overnight. Businesses and industries across the state are reaping the bounties of the global economy, even as some communities have been devastated by the seeming vagaries of offshore industrial location decisions. Today, thousands of Kentucky workers face hard choices they hoped they would not have to make. Moreover, the economic position that we have so relentlessly pursued continues to elude us, as incomes are growing here but our position relative to the nation has not changed.

The larger picture suggests that the very framework of our economy may be what's holding us back. While other states race to participate in the New Economy, a number of indicators show that ours remains anchored to an industrial structure that may not hold the promise of a better future that it once did. What's more, our entrepreneurial spirit, the real fuel of the New Economy, is by many assessments anemic. And, though we have invested significantly in educational reform, the high skills that are so critically important in today's economy will not be readily available in our state for some time to come. Nevertheless, many trends suggest that Kentucky firms are gaining a strong foothold in markets around the world, which may bode well for their future stability and our future economic status. Here, we examine some of the dynamics of the larger national economy, our relative position in it, and our potential to seize greater-than-incremental economic gains in the years ahead.

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[3] Robert D. Atkinson, Randolph H. Court, and Joseph M. Ward. *The State New Economy Index* (Washington: Progressive Policy Institute, July 1999) 3.

[4] Atkinson, Court, and Ward.

[5] Atkinson, Court, and Ward.

The E-Economy Arrives

Now in its ninth year of expansion, the longest period of sustained growth in the nation's history, this veritable miracle of an economy, many analysts believe, is the product of re-engineered or "e-engineered" businesses that have finally begun to realize some of the potential of the information technology in which they are investing trillions of dollars[6] and the reorganization of work prompted by global competition. The operative word is "some." Indeed, we do not know how far this new "digital" economy will take us, only that we cannot afford to miss the wild ride.

In its third annual report on its namesake phenomenon, *Digital Economy 2000*, the U.S. Department of Commerce proclaimed in June 2000 that what it had previously described as an "emerging" phenomenon had most assuredly arrived. "Americans have definitively crossed into a new era of economic and social experience bound up in digitally-based technological changes that are producing new ways of working, new means and manners of communicating, new goods and services, and new forms of community," observed Robert J. Shapiro, Under Secretary of Commerce for Economic Affairs.[7] Indeed, much of the economic growth enjoyed by the United States during the latter half of the 1990s can be attributed to the broad economic impact of information technology, which helped produce, if only on paper, enormous wealth, ratchet up productivity gains, dampen inflation, create high-wage jobs, raise employer expectations, and forever change the way we work and live.

The "new" or "digital economy" that is the topic of so much discussion is clearly a global system of commerce and industry in which the keys to wealth and job creation are knowledge, innovation, ideas, and technology. More precisely, Yale economist William D. Nordhaus suggests that it involves "the acquisition, processing and transformation, and distribution of information."[8] Its components are the computer hardware that processes information, the communications systems that distribute it, and the software that enables humans to manage the process. The synergy between these components, Nordhaus observes, is what differentiates it from earlier manifestations of the separate technologies.[9]

Though information technology industries provide only 8 percent of the nation's economic output, as much as one third of U.S. economic growth over the past five years can be attributed to its powerful influence, according to the Commerce Department. These analysts point to plummeting computer prices, which have fallen at a rate of 26 percent a year over the past five years, as the impetus for $510 billion in business investment in hardware and software, and as an important drag on inflation, pulling it down by half a percentage point each year over the last half of the decade.

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[6] Peter Burrows and Jim Kerstetter, "Still Going Strong," *Business Week* 1 May 2000: 42.

[7] Robert J. Shapiro, Lee Price, and Jeffrey Mayer, editors, *Digital Economy 2000* Office of Policy Development, Economic and Statistics Administration (Washington: U.S. Department of Commerce, June 2000) xiii.

[8] William D. Nordhaus, "Policy Rules in the New Economy," presentation, Congressional Budget Committee and Senate Budget Committee, Washington, D.C., 6 June 2000, 30 June 2000, <ftp://ftp.cbo.gov/20xx/doc2095/nordhaus.pdf>.

[9] Nordhaus.

Moreover, the Commerce Department notes, jobs in information technology posted salaries 85 percent higher than those enjoyed by the private sector as a whole.[10] A separate, February 2000 report, "Nothing But Net: American Workers and the Information Economy," from Rutgers University and the University of Connecticut also found a wage differential for workers who use computers on the job. As with several preceding studies, this study found that workers who earn lower incomes are less likely to use computers and the Internet than those in higher income brackets. Specifically, they found that 57 percent of workers earning less than $40,000 a year use computers during their workday compared with 77 percent of workers who earn more than $40,000 a year.[11] Though computers are now part of most workplaces, the routine use of them on the job is strongly associated with higher wages.

Since 1995, the Federal Reserve's Oliner and Sichel conclude, information technology also has been key to productivity gains, the indicator that is most strongly linked with the capacity for economic growth. The use of information technology throughout the economy and the production of computers and embedded semiconductors, they find, account for as much as two thirds of the 1 percentage point boost in productivity between the first and second halves of the decade.[12] During this period, productivity rose at 2.5 percent a year, almost double the average pace over the prior 25 years.[13]

And the potential of what Nordhaus terms the "brand new economy,"[14] Internet-based commerce, has yet to be realized. Though the economic output of these web-based businesses is insignificant to date, many prognosticators envision an incalculable, perhaps limitless role for the electronic arena, one in which retail sales and business-to-business (B2B) commerce explode, just as Internet communications have. Web advertiser spending alone grew 140.6 percent in 1999, to $4.6 billion, according to Veronis Suhler, a firm that tracks and forecasts communications industry spending. The firm predicts that advertiser spending will quadruple by 2004 and exceed spending on consumer magazine advertising.[15] The target audience is already global. Worldwide, according to the U.S. Department of Commerce, the number of people with Internet access soared 78 percent in the last year alone to 304 million, a 100-fold increase since 1994.[16] Regardless of whether the millions who are logging on to the Internet are viewed as potential customers or participants in a new era of global enlightenment, our world is changing at warp speed. The challenge is not to be left behind.

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[10] Shapiro, Price, and Mayer.

[11] John J. Heldrich Center for Workforce Development at Rutgers and Center for Survey Research and Analysis at the University of Connecticut, *Nothing But Net: American Workers and the Information Economy* (New Brunswick, N.J.: Author, 2000). (Available at <www.heldrich.rutgers.edu>).

[12] Stephen D. Oliner and Daniel E. Sichel, "The Resurgence of Growth in the late 1990s: Is Information Technology the Story?" discussion paper, Federal Reserve Board, May 2000, 7 July 2000 <http://www.federalreserve.gov/pubs/feds/2000/200020/200020pap.pdf>.

[13] Oliner and Sichel.

[14] Nordhaus.

[15] Jane L. Levere, "Spending, Led by Internet, Forecast to Reach $249 Billion in 2004," *New York Times on the Web* 8 Aug. 2000, 8 Aug. 2000 <http://www.nytimes.com/library/financial/columns/080800internet-adcol.html>.

[16] Shapiro, Price, and Mayer.

Conclusions about the scope of information technology's contribution to the economy clearly differ. Forecasts do as well. The more optimistic analysts who are paid to predict and act on the nuances of the buoyant U.S. economy believe we have just begun to realize the enormous potential of information technology, that economic growth and its benefits will be sustained throughout the foreseeable future and perhaps indefinitely. Others see many potential pitfalls in today's economy. They include soaring consumer and commercial debt, a gargantuan trade deficit—50 percent higher in 1999 than in the preceding year[17]—record levels of temporary and contract workers who could be easily jettisoned in a downturn, and a technology industry that could be extremely vulnerable if revenues fall sharply.[18] Still others observe that, so far, the so-called "New Economy" is narrowly focused on "the computer industry and its siblings," a relatively small part of our larger economy.[19] The Bureau of Labor Statistics concludes that only about a quarter of the nation's remarkable productivity growth can be attributed to "the ripple effect" of computer applications,[20] the force that will ultimately sustain the economic benefits of technology.

On a far lighter note, wry commentators occasionally remind us of how much productivity we have lost to daily e-mail exchanges. And occasionally the lavish reportage on the comings and goings of dot.com companies is countered by a sobering account of the so-far unimpressive profits most have logged. Those lackluster profits and the disappointed investors could be the beginning of the end, suggests *Business Week* economics editor, Michael J. Mandel. In *The Coming Internet Depression*, he foresees a downward economic spiral that will start when the technology sector is unable to raise the kind of cash that was once free flowing. The lack of capital will stall innovation, reduce competition, cut productivity, and ultimately stall the economy.[21] At the close of 2000, the Nasdaq's performance and the earnings of technology firms appeared poised to make Mandel's predictions uncannily prescient.

In spite of the warnings, technology continues to penetrate further into our daily lives. Few would argue that it is the way of the future. The Internet and the pace of communications it enables are becoming central to our lives. Indeed, the usually esoteric Nobel Prize in Physics took a decidedly pragmatic turn in 2000 when it was awarded to three scientists who developed what *The New York Times* called the "soul" of the personal computer, the electrical components that permit rapid communication via fiber optics and satellites.[22] In 2000, electronic signatures became legally binding "John Hancock's" under federal legislation adopted by Congress, which recognized the importance of providing an adequate legal

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[17] Richard W. Stevenson, "Economy May Have a Soft Spot," *New York Times on the Web* 10 June 2000, 12 June 2000 <http://www.nytimes.com/library/financial/061000trade-imbalance.html>.

[18] Michael J. Mandel, "The Risk That Boom Will Turn to Bust," *Business Week* 14 February 2000: 120-122.

[19] Louis Uchitelle, "In a Productivity Surge, No Proof of a 'New Economy,'" *New York Times on the Web* 8 Oct. 2000, 10 Oct. 2000 <http://www.nytimes.com/2000/10/08/technology/08VIEW.html>.

[20] Uchitelle, "In a Productivity Surge ..."

[21] Michael J. Mandel, "The Next Downturn," *Business Week* 9 Oct. 2000: 173-180.

[22] James Glanz, "3 Men Vital to Internet Share Physics Prize," *New York Times on the Web* 11 Oct. 2000, 11 Oct. 2000 <http://www.nytimes.com/2000/10/11/science/11PHYS.html>.

framework for advancing e-business. Soon technology is expected to liberate communications from the very wires that have become a metaphor for connection to the Web, enabling contact via a cell phone or other yet-to-be-invented devices. Small computers that can be worn or embedded in household fixtures as mundane as refrigerators are expected to become commonplace and tell us more than we ever wanted to know.[23] What's more, the Net is finally luring old-line U.S. industries—good news for Kentucky's strong base of traditional manufacturers. From marketing to purchasing, from online product development to electronic brainstorming sessions, e-engineering can be expected to enable rapid innovation, faster design, production and delivery times, trillions in savings, and higher profits, the very things that "have the potential to keep the fast-growth, low-inflation miracle alive."[24]

How Business Will Change

Clearly, business is changing in fundamental and revolutionary ways: many corporations are moving away from the traditional hierarchical pyramid structure to a decentralized web or network; information and ideas are making a bigger contribution to the bottom line than physical assets; product customization instead of product homogenization is driving the new business model; companies are increasingly focusing on attracting and retaining quality employees; the pursuit of global markets, suppliers, and quality personnel is becoming the norm, not the exception; nimbleness, flexibility, and above all, speed, are prerequisites for a company to succeed in the digital age.[25]

At the center of these changes is information technology or "digitization." According to PriceWaterhouse Coopers, the information technology revolution will cause a sea change in the way business is conducted (see Figure 1).[26] Interviews with CEOs conducted by these researchers revealed that virtually all believe their businesses will be affected, with a majority anticipating a "significant impact" to becoming "completely reshaped."

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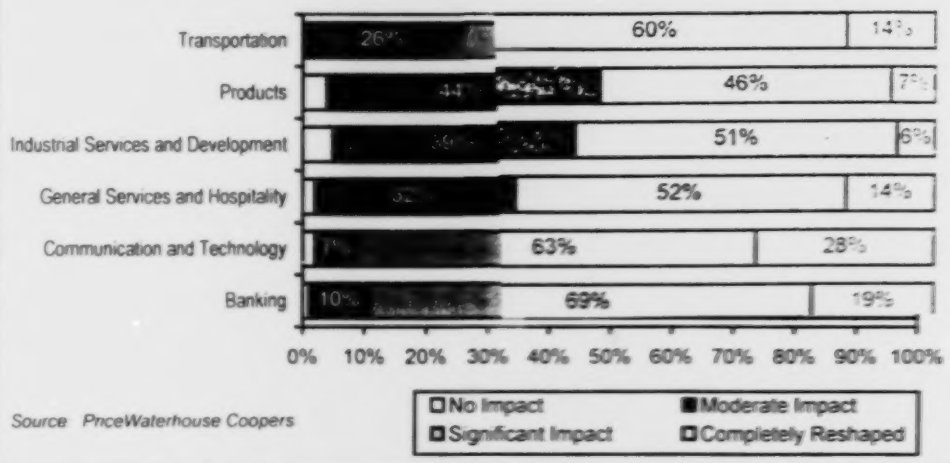
[23] John Markoff, "IBM Device Raises Storage of Tiny PC's," *New York Times on the Web* 20 June 2000, 20 June 2000 <http://www.nytimes.com/library/tech/00/06/biztech/articles/20blue.html>.

[24] Jennifer Reingold, Marcia Stepanek and Diane Brady, "Why the Productivity Revolution Will Spread," *Business Week* 14 February 2000: 112-118.

[25] John A. Byrne, "Management by Web," *Business Week*, 28 August 2000: 84-96.

[26] Dennis Reker, untitled presentation, Digital Divide Meeting, Louisville, Kentucky, 8 Aug. 2000. The meeting was sponsored by the Community Foundation of Louisville, the Louisville Urban League, and the University of Louisville.

FIGURE 1
The Anticipated Impact of Information Technology on Business, by Sector



Source PriceWaterhouse Coopers

By embracing the technology of the digital age, many companies are realizing huge savings. Examples abound. Rick Steele, CEO of Kinko's new Internet site, kinkos.com, says, "The error rate for online ordering is 1 percent, compared to 10 percent rates offline."[27] Kinko's estimates that it can save $1 million a year by reducing order errors.[28] Banking provides another example. A typical bank transaction costs $1.25 when handled by a teller, 54¢ when done by phone, 24¢ at an ATM, and only 2¢ over the Internet.[29] And Kentucky-based Humana Inc. has demonstrated how to achieve savings on a task that all companies perform, handling and processing job applications. It has reduced the average cost of handling a job application and résumé from $128 to 6¢ by digitizing the process.[30]

Cisco Systems takes the concept of the networked company to staggering heights: approximately 90 percent of its orders come into the company without being touched by human hands, and 52 percent of them are fulfilled without a Cisco employee being involved.[31] According to John T. Chambers, Cisco's CEO, "That will be the norm in the future. Everything will be completely connected, both within a company and between companies."[32] These so-called business-to-business or B2B exchanges represent the bulk of projected Internet commerce growth (see Figure 2).

[27] Arlene Weintraub, "Late to the Party," *Business Week* 28 August 2000: 254.
[28] Weintraub.
[29] Byrne 88.
[30] Byrne 90.
[31] Byrne 94.
[32] Byrne 94.

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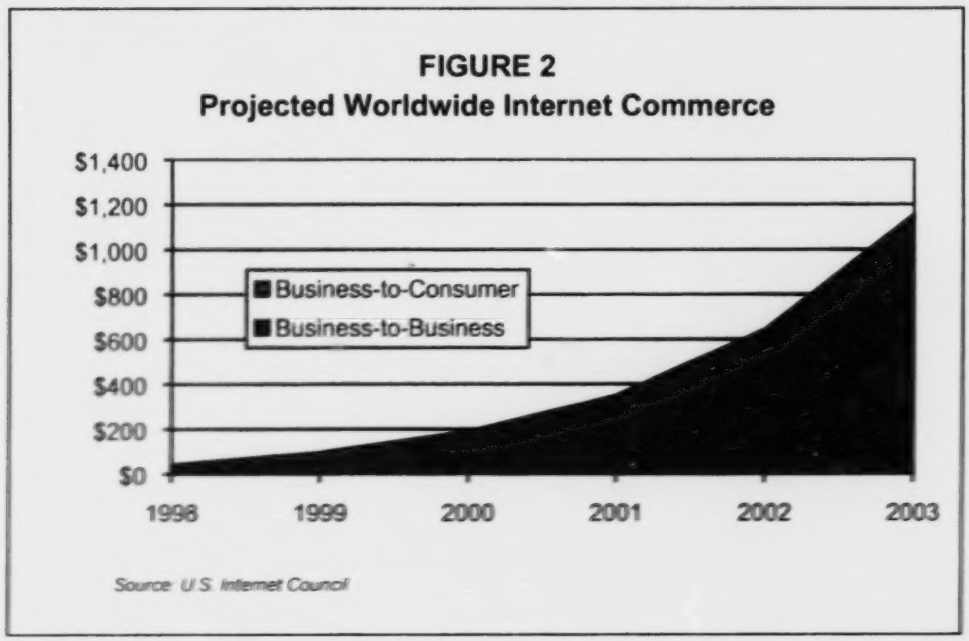

While business-to-consumer projected growth is much smaller than projected B2B growth, it still offers enormous potential for Kentucky firms. It is estimated that from 1997 to 2002 the percentage of Americans aged 14 and over who will have purchased something online will increase tenfold, from about 3.2 percent to approximately 30 percent.[33] A recent Forrester Research survey found that the average American who makes purchases on the Internet spends $322 a year,[34] with total consumer online shopping revenues for 1999 estimated by various sources to be between $3.9 billion and $36 billion.[35] In the first seven months of 2000, total consumer online spending was estimated at nearly $23 billion.[36]

Jobs, Jobs, and More Jobs

Throughout modern political memory, "jobs, jobs, jobs" has been an American political mantra, the perceived key to economic Nirvana. Though the answers to many of our social and economic dilemmas remain unanswered, we've gotten the jobs we asked for—in spades. Today's job market remains nothing short of miraculous. Even after the Federal Reserve repeatedly raised interest rates to apply the brakes to the economy and hold inflation at bay, the mid-year 2000

[33] eMarketer, e-commerce data (1999), 6 June 2000 <http://www.emarketer.com/estats/sell_cons.html>.

[34] Austan Goolsbee, "In a World Without Borders: The Impact of Taxes on Internet Commerce," National Bureau of Economic Research working paper #6863, University of Chicago Web site (, 399), 21 July 1999 <http://gsbwww.uchicago.edu/fac/austan.goolsbee/research/intertax.pdf>.

[35] eMarketer.

[36] National Retail Federation (NRF) and Forrester Research, Inc., in conjunction with Greenfield Online, data on online retail sales for first six months of 2000, 24 July 2000 <http://www.forrester.com/NRF/1,2873,0,00.html>, and for July 2000, 24 July 2000 <http://www.nrf.com/findex/default.htm>.

economy was still producing enough jobs to achieve what was once defined as full employment. In recent years, labor shortages have become commonplace, evidenced by the nearly ubiquitous "now hiring" and "help wanted" signs at retail and fast-food establishments. By mid-2000, the pool of available U.S. workers had dwindled to a record low of 9.5 million,[37] and unemployment stood at 4.2 percent. Here in Kentucky, the jobless rate fell to 3.7 percent in April 2000, the lowest rate for the month in nearly 30 years.[38] In August, the state's unemployment rate followed historical trends and fell below its July rate of 3.8 percent to 3.5 percent.[39] During the latter half of the year, unemployment remained low in spite of an economic slowdown.

The sustained strong demand for workers in the 1990s has enabled the entry and reentry of previously unemployed or underemployed people, producing record high levels of labor force participation nationally. Expanding employment opportunities have also softened the landing for many former welfare recipients, creating jobs where none existed and easing labor force entry for those with little experience and few skills.

Instead of too few jobs, many highly skilled workers have found themselves in the enviable position of having an array to pick from. The many veterans of failed dot.coms, for example, find little reason to fear prolonged unemployment. Over the course of the 1989-1999 decade jobs for those in the group of highest wage earners grew 27 percent, while jobs for mid-level wage earners grew by just 1 percent, based solely on the strength of late-decade growth.[40] During the same time, jobs for those at the lowest end of the wage scale increased 16 percent.[41]

Job prospects for college graduates appear very bright. An annual survey of employers by the Collegiate Employment Research Institute of Michigan State University found that employment opportunities will likely increase by between 6 percent and 10 percent during 2000-2001 and by as much as 25 percent in some sectors.[42] Over the long term, the Bureau of Labor Statistics estimates that 1.3 million jobs will open annually for college graduates between 1998 and 2008, an increase of 158,000 jobs a year over the prior decade, largely attributable to a 58 percent rise in anticipated needs for replacement workers. Many college graduates will fill jobs left by retiring Baby Boomers. Replacement jobs are expected to comprise 36 percent of all the jobs available to college graduates over the 1998-2008 decade, up from 25 percent over the prior decade. And unlike circumstances during the previous decade, the number of available jobs is expected to more closely match the number of available workers. Still, about 90,000 college graduates, compared to 183,000 over the previous decade, are expected to enter jobs

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[37] Bureau of Labor Statistics (BLS), "The Employment Situation: June 2000," news release, U.S. Department of Labor, Washington, D.C., 7 July 2000.

[38] Kentucky Department of Employment Services (KDES), news release, "Labor Market Information," Workforce Development Cabinet, Frankfort, Kentucky, April 2000.

[39] KDES, news release, "Labor Market Information," Workforce Development Cabinet, Frankfort, Kentucky, Aug. 2000.

[40] Randy E. Ilg and Steven E. Haugen, "Earnings and Employment Trends in the 1990s," *Monthly Labor Review* March 2000: 21-33.

[41] Ilg and Haugen.

[42] Leo Reisberg, "A Strong Job Market Awaits College Seniors," *The Chronicle of Higher Education Online* 1 Dec. 2000.

every year that do not require a college degree,[43] a circumstance that underscores the need for career planning and the cultivation of skills the marketplace demands.

In today's tight labor market, some employers are going to great lengths to woo and keep highly skilled workers. While their counterparts faced uncertain job demands just a few short years ago, college graduates are enjoying the fruits of a sellers' market—higher starting salaries, sign-on bonuses, and previously unthinkable "perks" from employers eager to please.[44] Enticements for highly skilled workers range from stock options to cold cash, from wardrobe allowances to loans to help with that first-home purchase.[45] Even at the lowest end of the wage ladder, many workers are being offered sign-up bonuses and unaccustomed benefits, and, given the glut of retail and service sector jobs, most can virtually move at will.

Not surprisingly, "employee churn" is also a facet of the New Economy.[46] The much-heralded dot.coms, only some of which have found a responsive niche in the consumer consciousness, are the most memorable of recent examples of firms and jobs that have come to life—and quickly died—in today's volatile economy. In a February 2000 survey, the Bureau of Labor Statistics (BLS) found that nearly three fourths of workers who had lost jobs during the preceding three years had found other employment.[47] So most workers who lose a job find a new one, but average tenure has declined. In a separate report, BLS finds that, while employee tenure increases with age, about one fourth of all workers in today's economy have been with their employer for 12 months or less. For all workers, median tenure on the job declined between 1996 and 2000, from 3.8 years to 3.5 years, after rising slowly since 1987. While no further declines were found between 1998 and 2000, median years of tenure for men declined between 1996 and 1998, after years of relative stability. Women, on the other hand, experienced a decline in median tenure between 1996

TABLE 1
Employment in the South, 1978-1997

	Job Growth	Jobs per 100 People	
		1978	1997
United States	42.6%	49.4	58.4
South	54.2%	48.3	57.3
Alabama	35.7%	44.7	53.8
Arkansas	40.0%	45.6	56.7
Florida	89.5%	46.4	54.7
Georgia	70.4.%	49.6	59.7
Kentucky	**33.0%**	**45.6**	**56.0**
Louisiana	24.3%	45.4	52.7
Mississippi	29.4%	44.3	52.2
North Carolina	56.5%	51.4	62.1
Oklahoma	31.9%	49.0	56.7
South Carolina	46.4%	48.3	57.5
Tennessee	47.6%	49.9	61.2
Texas	62.9%	51.1	61.2
Virginia	53.0%	51.0	61.2
West Virginia	10.7%	40.7	47.6

Source: MDC analysis of data from BEA Regional Economic Information System, U.S. Department of Commerce, 1998, 1999

[43] Chad Fleetwood and Kristina Shelley, "The Outlook for College Graduates, 1998-2008: A Balancing Act," *Occupational Outlook Quarterly* Fall 2000: 3-9.

[44] Jennifer Reingold, "For the Class of 2000, the Sellers' Market Intensifies," *Business Week* 8 May 2000: 54.

[45] Dean Foust, "Wooing the Worker," *Business Week* 22 May 2000: 44.

[46] Julie Forster, "That's It, I'm Outa Here," *Business Week* 9 Oct. 2000: 97-98.

[47] BLS, "Worker Displacement During the Late 1990s," news release, U.S. Department of Labor, Washington, D.C., 9 Aug. 2000.

and 2000, from 3.5 years to 3.3 years. Among men, the proportion of workers who had been with the same employer for 10 or more years fell in nearly every age group while the proportion of women with 10 or more years of tenure increased.[48]

In an analysis of the South's economy, MDC estimates that the region gained 17.7 million jobs between 1978 and 1997, nearly 4 million more than it would have if its industrial structure and economic growth rate had matched the nation's. While jobs grew nationally at 42.6 percent, job growth in the South reached 54.2 percent. However, had the region's business sector mix paralleled the nation's, MDC estimates it would have created another 1.2 million jobs. The South has gained substantially fewer jobs in services than the nation as a whole, which enjoyed dramatic growth in services during the 1980s and 1990s. Since the 1970s, Kentucky has logged a job growth rate of 33 percent, gaining more than 10 jobs per 100 people over the two-decade period examined. While the overall regional and national job growth rate was significantly higher, Kentucky's gain in the number of jobs per 100 people was larger than the South's and the nation's over the period examined (see Table 1).[49]

Going, Going, Gone Global

Today, Main Street stores or garage-based entrepreneurs in any wired Kentucky town can do business with the world. The economy has become global, and thus, the fortunes of whole nations have become intertwined and interdependent. Today, the machinations of a hacker in the Philippines can disrupt world commerce. At the same time, a much-needed product part at an assembly plant on the other side of the world can revive a factory in a remote corner of rural Kentucky. The marketplace has become as seemingly vast as the human imagination. Though we have justifiable trepidation about what this global economy will ultimately do to the quality of jobs, living conditions, and the environment, both here and abroad, the possibility of retreat seems remote and, arguably, ill-advised. Instead, public policymakers, business and industry leaders, and entrepreneurs alike face the imperative of discovering and seizing more of the virtually limitless opportunities this global economy has to offer.

Today's increasingly integrated global economy is being propelled by an amazing confluence of factors. As the Chapel Hill, North Carolina, economic development firm MDC reports in *The State of the South 2000*, the "scope and intensity" of globalization, which has been driving economic change for some time, has created a far more complex and far less predictable environment. As suggested by MDC, the economy of the entire South—like that of the nation—is responding to interwoven factors, including:

- ⇨ A knowledge revolution that has transformed our capacity and our potential;

[48] BLS, "Employee Tenure in 2000," news release, U.S. Department of Labor, Washington, D.C., 29 Aug. 2000.

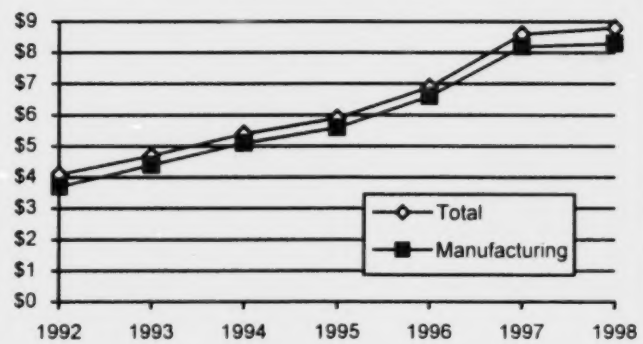
[49] MDC Inc., *State of the South 2000* (Chapel Hill: Author, Sept. 2000).

- ⇨ Information technology that has irrevocably changed the marketplace, from the products it offers to the way business is conducted, altering the competitive positions of states and nations in the process;
- ⇨ Technology that enables manufacturers to produce more goods with fewer workers; and
- ⇨ Receding barriers to the flow of goods, services, and people, and, correspondingly, expanding markets.[50]

As a consequence of this collision of forces, we have become far more dependent upon export markets and, to a lesser extent, the direct investment of foreign capital in enterprises here in the United States for economic growth. Both have become an important source of jobs and income. According to the Office of the U.S. Trade Representative, the United States has experienced an eight-year export increase of more than 75 percent or nearly $500 billion in exports of goods and services. For the first time ever, exports will top $1 trillion in 2000.[51] On average, the Office of the U.S. Trade Representative estimates that for every billion dollars of goods and services exported, thousands of jobs are created. Between 1994 and 1998, 1.3 million new jobs supported by the exports of goods and services were created in the United States. Moreover, jobs supported by goods exports pay an estimated 13 percent to 16 percent more than the average U.S. wage.[52]

While globalization has also exacted losses, Kentucky has benefited from a rising export market and the investment of significant foreign capital. During the same time period, exports increased at a real annual rate of 10.6 percent a year, a faster pace than found in all but 10 other states.[53] Not surprisingly, Kentucky has continued to gradually ascend in the rankings of states by the value of their exports. Rising exports have helped Kentucky-based firms stay competitive and increase profitability and market strength. In turn, the economic position of communities and families that rely upon them has been strengthened.

FIGURE 3
Value of Kentucky Exports
(in billions of dollars)



Source: Kentucky Cabinet for Economic Development

[50] MDC Inc., 2000.

[51] Carla Barshefsky, "The Record and the Road Ahead," speech, Office of the U.S. Trade Representative Web site, 14 Dec. 2000, 18 Dec. 2000 <http://www.ustr.gov/speech-test/barshefsky/barshefsky_106.html>.

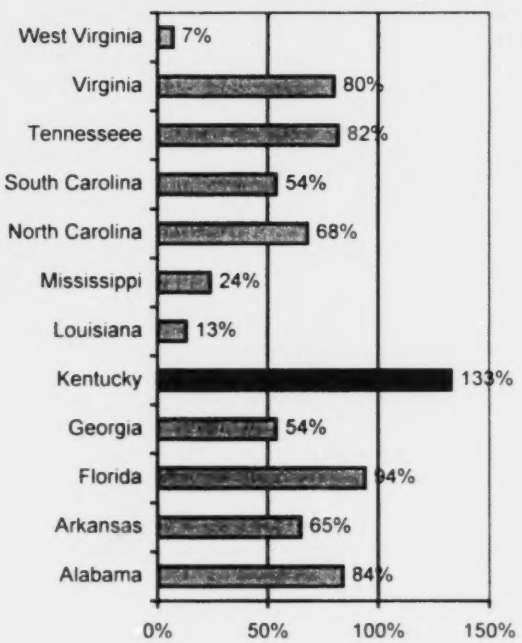
[52] "The World Trade Organization Works for You," Office of the U.S. Trade Representative Web site, 18 Dec. 2000 <http://www.ustr.gov/html/wto4you.html>.

[53] Mihalis Halkides and E.M. Ekanayake, "International Business and Economic Development: Introducing the Basic Facts," *Economic Development* Spring 2000: 6.

According to the Cabinet for Economic Development, the value of Kentucky's exports has more than doubled during the 1990s, rising from $4.1 billion in 1992 to $8.8 billion in 1998.[54] Manufactured goods accounted for more than $8.3 billion, or 94 percent of the state's 1998 exports (see Figure 3). Transportation equipment ranked first in export shipment value, with over $2.8 billion in export sales. Kentucky ranked 11th in the nation in total transportation equipment export sales. Following transportation equipment were industrial machinery and chemicals and allied products, all high value-added products. These three industries accounted for almost 60 percent of the state's total 1998 exports. Important agricultural exports include livestock, soybeans and tobacco. At $97 million in export sales, mining also contributed substantially.

In 1998, Kentucky's exports were 1.3 percent of total U.S. exports, compared with 1.0 percent in 1990. Kentucky ranked 22nd in the nation in 1998 in terms of the increase in its share of total U.S. exports relative to other states. The state's improved ranking from 1996, when it ranked 23rd, indicates an increase in its share of total U.S. exports relative to other states.[55] Canada continued to be Kentucky's largest foreign market, receiving almost $2.6 billion in goods or nearly 30 percent of the state's total exports. Following Canada, Kentucky's major export markets were western Europe and the Pacific Rim.[56]

FIGURE 4
Percent Growth in Employment in Foreign Affiliates, Kentucky and Selected States, 1977-1997



Source MDC, Inc

MDC's analysis of the progress of globalization in the South finds that the region continues to lag behind the national average in terms of exports as a percent of gross state product. Exports in Kentucky, however, comprised the region's highest percentage of gross state product (6.9 percent), with the

[54] Kentucky Economic Development Cabinet (KEDC), *Kentucky Exports* (Frankfort, Kentucky: Author, May 1999).
[55] U.S. Bureau of the Census, *1998 Statistical Abstract of the United States*, Table 1321 (Washington: U.S. Department of Commerce, Economics and Statistics Administration, 1999).
[56] KEDC.

exception of Texas (9.4 percent). Still, the Commonwealth lagged behind the national average of 8.5 percent in 1997.[57]

Foreign-direct investment or the location of foreign affiliates also has created thousands of jobs across the South and the nation. Between 1988 and 1997, real foreign direct investment increased in Kentucky by an annual average of 10.6 percent, a growth rate higher than in all but seven other states. Between 1987 and 1997, a time frame for which data are available from the Bureau of Economic Analysis but one that excludes some of the most extraordinary growth of the past five years, the Commonwealth benefited from more than 50,000 jobs created by foreign affiliates. During the 1987-1997 time period, however, Kentucky enjoyed the South's largest percentage increase (133 percent) in jobs created by foreign affiliates, followed by Florida (94 percent) and Alabama (84 percent) (see Figure 4). By 1997, the portion of manufacturing employment in foreign affiliates in Kentucky had reached 19.6 percent, again the region's highest share. By contrast, manufacturing jobs in foreign-owned affiliates in the South stood at 12.6 percent, while the U.S. average was 10.7 percent. While many of these new firms are branch plants that make their most significant economic contributions to cities and regions that host their U.S. headquarters and are subject to move again in the event of a changed local environment or larger economic position, their presence has helped improve the economic circumstances of many families in the Commonwealth.

Yet another measure indicates that a significant portion of Kentucky's firms are fully prepared to participate in the global economy and thus remain sufficiently competitive, profitable, and, ideally, a long-term presence in the state. Firms that achieve ISO 9000 status do so by demonstrating that they have adopted rigorous quality standards to meet international customer and supplier demands. The number of Kentucky firms that have met this test of preparedness for the international marketplace has increased sevenfold since 1994. Moreover, relative to our neighboring states, the majority of which have far more urban economies than our own, Kentucky is well positioned in regard to the number of registered ISO 9000 businesses per 1,000 firms. Only the larger, more urban states of Ohio, Illinois, and Indiana have higher rates (see Figure 5).[58]

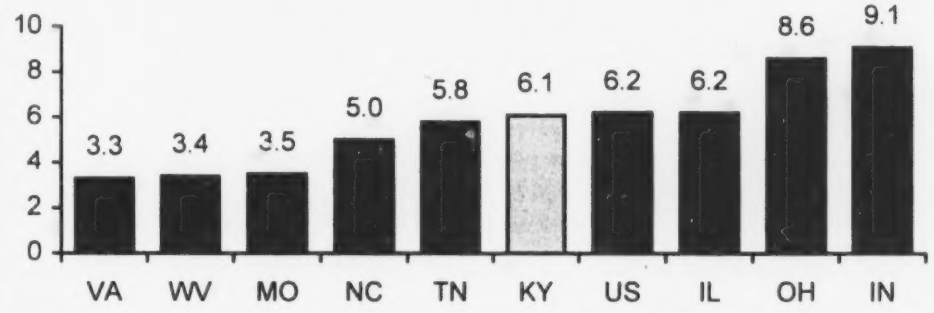
Because manufacturers dominate the much-sought-after rolls of ISO 9000 registrants, Kentucky may be better positioned than some data suggest. Among surrounding states, Kentucky has the third highest percentage of establishments that are manufacturers (9.4 percent), behind only Tennessee (11.0 percent) and North Carolina (10.7 percent). Nationally, the average portion of establishments that are manufacturers is 5.3 percent, according to *County Business Patterns*. Though the state is home to several large manufacturing establishments, many of its manufacturers are small firms. Four surrounding states have a higher percentage of employees in manufacturing than Kentucky (Indiana, 25.0 percent; North Carolina, 23.9 percent; Ohio, 20.7 percent; and Tennessee, 21.0 percent), indicating more employees per firm and thus potentially greater vulnerability to

[57] MDC Inc., 2000: 19.

[58] *ISO 9000 Registered Company Directory: North America*, CD-ROM (Columbus, OH: McGraw-Hill, 2000).

dislocations. An estimated 20.1 percent of employees work in the manufacturing sector in Kentucky, compared with 9.4 percent nationally.[59]

FIGURE 5
ISO 9000 Registered Businesses per 1,000 Firms



Source: Kentucky Long-Term Policy Research Center analysis of data from McGraw-Hill, Inc.

Globalization is also gradually transforming the face of our population, and thus, our labor force, which is fast becoming more ethnically diverse and international. The U.S. Hispanic and Asian populations are predicted to grow at an unprecedented 2 percent per year growth rate. Hispanics are expected to become the nation's largest minority group as early as 2010 and possibly a quarter of the population by 2050.[60] By the middle of this new century, whites, who were still a significant majority in the 1990s at 73.6 percent of the population, may barely achieve majority status (52 percent).[61] In 1999, the number of foreign workers in the United States reached its highest level in seven decades, 15.7 million, according to the Bureau of Labor Statistics.[62]

As we have become more and more reliant on a large immigrant population to meet labor force demands, the anti-immigrant backlash of the mid-1990s has receded, and tolerance for diversity appears to be rising. But fully integrating these new citizens presents new problems for the nation as well as for our state. Among Hispanic immigrants to the South, MDC finds, 39.2 percent do not have a high school diploma, and another 27.2 percent have only a high school diploma.[63] The undereducation of young Hispanic immigrants, many of whom demographers predict will become long-term residents of Kentucky, makes it vitally important that we encourage and enable their participation in training and education opportunities. Otherwise, we could lose important momentum in raising the education and skill levels of our workforce.

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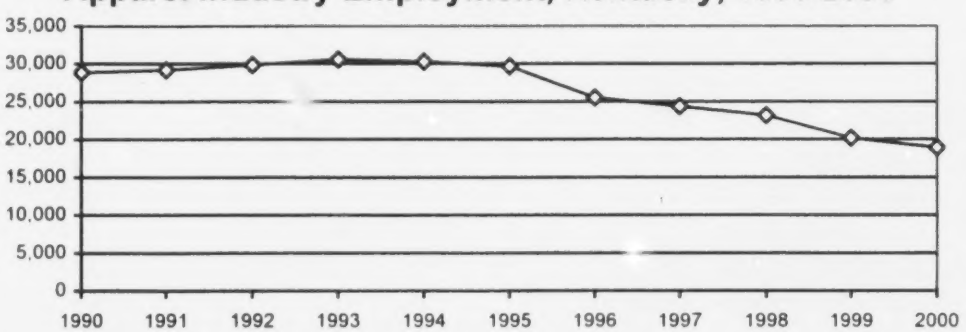
[59] U.S. Bureau of the Census, *County Business Patterns*, 1998, U.S. Bureau of the Census Web site (1999), 24 Oct. 2000 <http://tier2.census.gov/cgi-win/cbp_naics/compare.exe>.
[60] U.S. Census data as cited by U.S. Department of Labor (USDOL), *Futurework* (Washington: author, 1999).
[61] USDOL, *Futurework*.
[62] Steven Greenhouse, "Foreign Workers at Highest Level in Seven Decades," *New York Times on the Web* 4 Sept. 2000, 5 Sept. 2000 <http://www.nytimes.com/library/national/090400foreign-labor.html>.
[63] MDC Inc., 2000: 59.

Though globalization has created jobs and contributed to spreading prosperity here, it has not been without negative consequences. Perhaps the most painful product of globalization, one that often obfuscates its benefits, is job displacement. Dissolving barriers to trade have permitted industries to shop in a global marketplace for locations that will permit them to reduce production costs and become more competitive. U.S. labor costs are frequently the first-strike target of cost reduction. While it does not factor in productivity, the rate of which has risen sharply in the United States and remains key to production costs, 1999 hourly compensation for production workers in manufacturing in U.S. dollars ranged from $2.12 in Mexico, to $5.44 in Hong Kong, to $5.62 in Taiwan, and $16.60 in Ireland, to $19.20 in the United States.[64] And these comparative wages are by no means the world's lowest. While 1999 data were unavailable, in Sri Lanka, a target relocation site for segments of the apparel industry, the average 1998 wage was 47 cents an hour.[65]

While industrial relocations offshore clearly afford industries economic advantages, the consequences are devastating for local communities like Columbia, Kentucky, where the workforce depended heavily on regional apparel industry jobs that have been among the first to go in the global marketplace. Though the pace of job losses in the apparel industry is expected to slow somewhat in the coming years, it remains among the most likely targets for relocation. As these and other low-skill production jobs move to developing countries, affected rural communities and families are finding it difficult to regain their economic footing. Though nondurable goods-producing industries like apparel manufacturing remain an important component of Kentucky's and the entire South's economy, job losses in this sector will almost certainly continue to displace workers and jolt local economies. As shown in Figure 6, apparel industry firms such as Union Underwear and Fruit of the Loom that were once the state's dominant manufacturing employers have shed nearly 12,000 jobs in Kentucky over the past decade.

FIGURE 6

Apparel Industry Employment, Kentucky, 1990-2000*



* Average as of August 2000

Source: Bureau of Labor Statistics

[64] BLS, "International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing, 1999" news release, U.S. Department of Labor, Washington, D.C., 7 Sept. 2000.

[65] BLS, "International Comparisons ..."

One organization, the Corporation for Enterprise Development (CFED), a nonprofit based in Washington, D.C., that advocates and facilitates sustainable and equitable development strategies, sees little evidence that Kentucky's advances in the global economy have produced a higher quality of life for its citizens. CFED's *2000 Development Report Card for the States* gives Kentucky an overall grade of a "D" and a "D" on its Performance Index, one of three larger indices that measure how well a state's economy is "providing a widely shared and sustainable standard of living." CFED also gave the state a "D" on its "Development Capacity Index," the state of its physical and human infrastructure, and a "C" on its "Business Vitality Index."[66] Many of the weaknesses that CFED and others point to have roots in the undereducation of Kentuckians, an enduring problem that has resulted in increasingly costly consequences in this era of change.

The Rising Returns to Education

The gradual and, some have argued, destructive devaluation of physical or low-skill labor represents one of the most significant changes witnessed in recent U.S. history. It has reduced many workers to poverty-level wages, alienated and emasculated men who once took great pride in their ability to care for themselves and their families, and contributed substantially to what has been, in recent years, the largest income gap in the industrialized world. As prominent social theorist Peter F. Drucker has observed, no class in history has fallen faster than that of blue collar workers.[67] At the opposite end of the spectrum, highly skilled and highly educated workers, coined "knowledge workers" by Drucker, have high wages and ascending status.

Though the political dynasties represented in the presidential election would suggest otherwise, today's economy is extending unprecedented economic rewards as well as power and influence to its brightest workers, just as Drucker predicted it would.[68] More recently, in his "comic sociology" book, *Bobos in Paradise: the New Upper Class and How They Got There*, reporter David Brooks of *The Weekly Standard* asserts straightforwardly that so-called "bourgeois bohemians," the Bobos of his title, have already become the elite. Their status, he asserts, is the product of brainpower rather than the affluence of their parents—a direct consequence of the Information Age.[69]

Over recent decades, the returns to education have increased steadily, largely because the real incomes of undereducated, low-skill workers have lost substantial ground. Since 1963, the U.S. median income for men with a college education has grown by a relatively modest 22 percent, or less than 1 percent a year, from $38,496 to $47,126 in 1997. Over the same time period, however, incomes at all

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[66] Corporation for Enterprise Development, *2000 Development Report Card for the States* (Washington: Author, 2000).
[67] Drucker, Peter F., "The Age of Social Transformation," *Atlantic Monthly* Nov. 1994: 53.
[68] Drucker.
[69] David Brooks, *Bobos in Paradise* (New York, NY: Simon and Schuster, 2000).

lower education levels actually declined in real dollars.[70] From 1963 to 1997, a male high school graduate's median income fell from $28,917 to $25,453 while those men with 9 to 12 years of schooling without a diploma saw their incomes plummet, from a median of $24,837 to $16,818.[71] Women's incomes have increased at every education level, but college graduates have realized the largest gains at 53 percent.[72]

Some of today's fastest growing occupations require at least a bachelor's degree. Indeed, the fastest growing jobs in the nation are concentrated heavily in the professional specialty occupational group, which includes computer engineers, computer support specialists, computer systems analysts, database administrators, and desktop publishing specialists. This occupational group alone, which is principally comprised of high-skill jobs that require training and experience beyond a bachelor's degree, is predicted to grow by 27 percent between 1998 and 2008.[73] In Kentucky, jobs for "system analysts" are predicted to grow at the fastest rate for occupations requiring at least a bachelor's degree between 1996 and 2006 (90.4 percent), but only about 254 of these prized jobs will be created in the state.[74] Other fast-growing jobs include physical therapists (84.8 percent) and occupational therapists (82.4 percent),[75] who will be in strong demand as our population ages. By far, however, the most job openings (1,860 between 1996 and 2006) will be for "general managers and top executives," again occupations requiring extensive experience beyond a bachelor's degree.[76] Jobs for registered nurses (1,093), elementary (883) and secondary (620) teachers round out the list.[77]

The common denominator among the higher-paying jobs that are expected to be much in demand is education. As never before, it is paying returns to workers, making the prospects of a future without some postsecondary education relatively grim. Though some will succeed in our economy in spite of their educational shortcomings, they are likely to be rare exceptions to the rule. For the most part, without some education or training beyond high school, most workers can expect little more than subsistence wages. They can expect to work yet stay poor. In short, education really does pay.

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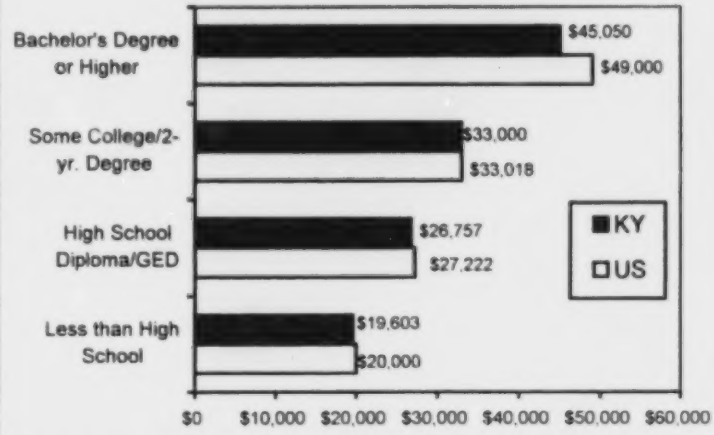
[70] U.S. Census Bureau, *Measuring 50 Years of Economic Change* (Washington: U.S. Department of Commerce, 1998).
[71] U.S. Census Bureau, *Measuring*.
[72] U.S. Census Bureau, *Measuring*.
[73] U.S. Census Bureau, *Measuring*.
[74] KDES, *Kentucky Occupational Outlook to 2006* (Frankfort: Workforce Development Cabinet, 1999).
[75] KDES, *Occupational Outlook*.
[76] KDES, *Occupational Outlook*.
[77] KDES, *Occupational Outlook*.

Figure 7 illustrates just how much it paid in 1998 alone. As shown, 1998 median incomes for the average U.S. and Kentucky full-time worker, age 25 years and older, increased steadily with educational attainment. Interestingly, these Current Population Survey data from the U.S. Census Bureau show a minimal disparity between earnings here and at the national level at every educational attainment level in 1998. The largest difference between earnings at the national level and in Kentucky occurs at the highest degree level—a bachelor's degree or better. However, this minor discrepancy does not contradict the underlying point that higher degreed workers enjoy an earnings premium in both the United States and Kentucky.

FIGURE 7
Median Income by Educational Attainment, Full-Time, Year-Round Workers, Age 25 and Older, US and KY, 1998

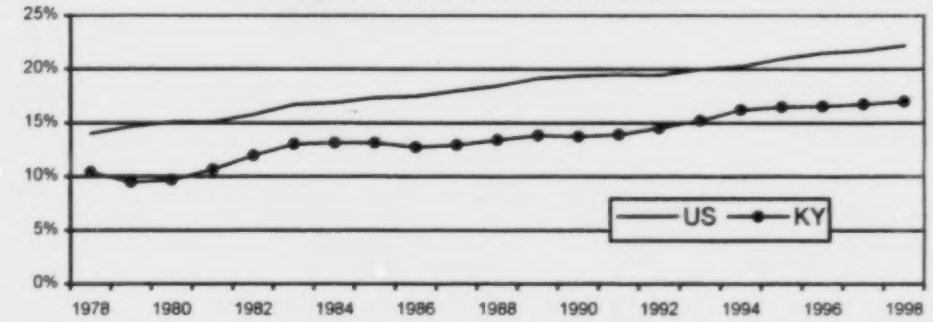


Source: Kentucky Long-Term Policy Research Center analysis of Current Population Survey, U.S. Census Bureau

While trends in educational attainment show substantial improvement in the Commonwealth, most other states are also enjoying similar trends. More and more individuals are pursuing postsecondary education in the face of declining economic fortunes for those without training or education beyond high school. While the proportion of Kentuckians who hold a college degree has risen steadily over the past 20 years, the national average has risen at a similar pace. Thus, as shown in Figure 8,[78] the percentage of persons in Kentucky with a bachelor's degree or higher relative to the national average has not improved. By contrast, as Figure 9 shows, the gap between the percentage of Kentuckians and the percentage of U.S. persons with at least a high school diploma has narrowed considerably over the past 20 years. In 1978, nearly 10 percentage points separated the portion of Kentuckians with a high school diploma from the U.S. average; by 1998, fewer than 5 percentage points separated the two.

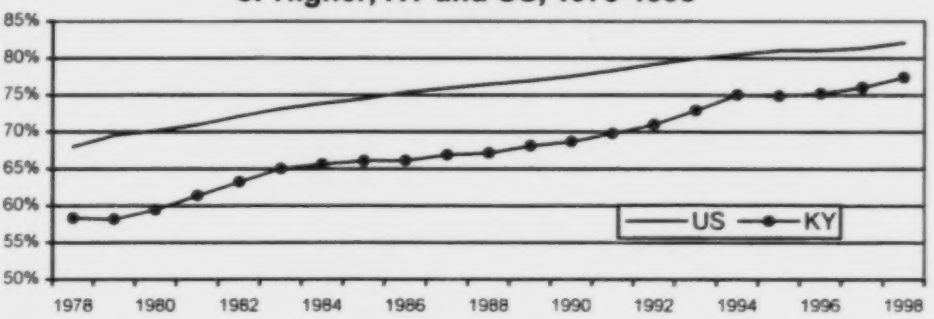
[78] To more clearly identify the long-term trend, three-year moving averages of the percentages were used at the state level for Figures 8 and 9 to smooth out any year-to-year variations resulting primarily from smaller sample sizes.

FIGURE 8
Percent of Persons with a Bachelor's Degree or Higher, KY and US, 1978-1998



Source: Kentucky Long-Term Policy Research Center analysis of Current Population Survey data

FIGURE 9
Percent of Persons with a High School Degree or Higher, KY and US, 1978-1998



Source: Kentucly Long-Term Policy Research Center analysis of Current Population Survey data

A 1998 analysis of the returns to education in Kentucky by UK economist Mark Berger found the difference between the weekly earnings of college graduates and high school graduates in the state had risen from 40 percent in the late 1960s to 60 percent in the mid-1990s.[79] Graduate and professional degrees in the state have yielded an even higher return relative to a high school graduate, up from 60 percent to 100 percent during the same time period.[80] Men and women with graduate degrees in Kentucky are, respectively, earning twice and three times

[79] Mark C. Berger, "Education and Earnings in Kentucky 1964-1996" in *1998 Kentucky Annual Economic Report* (Lexington: University of Kentucky Center for Business and Economic Research, 1998) 19.
[80] Berger.

as much as high school graduates.[81] Berger also found that the difference in the wages of those with some college compared to those with just a high school diploma also has been drifting upward over time, while the difference between the wages of those without a high school diploma and high school graduates has been narrowing.[82]

As the threshold for returns to education has gradually extended beyond a high school diploma, the economic health and prosperity of a state such as ours has come to depend in large part on its ability to train and educate its citizenry for high-skill, high-wage jobs and to develop or attract employment opportunities to match these emerging skills.

In recognition of the growing importance of intellectual capital, the Kentucky General Assembly laid an important foundation for Kentucky's participation in the New Economy with the enactment of the Endowment Match or "Bucks for Brains" Program during the 1998 regular session. Additional funding was provided in the 2000 session. By increasing the number of top-caliber research professors at Kentucky's public universities, this matching program provides an intellectual infrastructure for basic and applied research capacity. This intellectual infrastructure is essential if Kentucky is to establish and nurture research and development facilities that are fundamental to the incubation of high-tech businesses and industries. Combined with the required private match, over the four-year period, the program will infuse Kentucky's intellectual infrastructure with $460 million. As with efforts to improve the state's educational foundation, however, ours will continue to be a struggle for parity with states that have already made similar and, in some cases, more significant investments and realized substantial returns as a result.

Anchored to the Past?

For Kentucky, alignment with the New Economy will not be easy. First, Kentucky must prepare a large population of poor, undereducated Kentuckians for a new century of rising expectations, a particularly difficult challenge given the state's inability to meet lesser economic challenges over the past century. A historic underappreciation of the value of education in the state is further complicated by the unyielding affinity among many men for physical labor. As MDC observed in its 1998 report, *The State of the South*, "Too many Southern men see their careers based on their ability to do specific things: make things, drive things, dig things, lift things, or pick things. The economy, meanwhile, is rewarding those—regardless of race, gender, and ethnicity—who have the ability to think things."[83] As a result, Ron Crouch, Director of the State Data Center at the University of Louisville, often observes, "Bubba is in trouble."

In addition to educational limitations and cultural obstacles, much of the state's economy remains anchored to the past. And some research has shown a parallel between the trajectory of per capita income and industrial composition;

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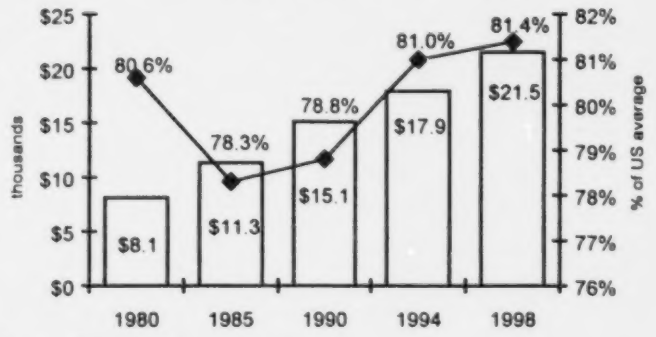
[81] Berger.
[82] Berger.
[83] MDC Inc., *The State of the South* (Chapel Hill: Author, 1998): 36-37.

that is, the closer the alignment of a region's or a state's industrial composition with the national industrial makeup, the more likely that per capita income will also converge with the national average.

A recent analysis of changes in the industrial composition of states between 1958 and 1998, for example, finds that Kentucky continues to receive a larger share of earnings from farms, mining, manufacturing, transportation and public utilities, and retail trade than the United States as a whole. At the same time, Kentucky receives a much smaller share of earnings from finance, insurance and real estate, and services than the nation, a circumstance that this study suggests may inhibit income growth. Although Kentucky has reduced its dependence on earnings from farming and mining, earnings from manufacturing remained virtually unchanged over the 40-year period examined, compared to a national decline of 11.3 percent. Overall, this analysis ranks Kentucky 33rd in terms of its alignment with or similarity to U.S. industrial composition in 1998, compared to 38th in 1958. By 1998, per capita income in Kentucky had reached 81 percent of the national average, compared to 73 percent in 1958, but the state ranked 42nd nationally. In 1958, it ranked 43rd.[84] As shown in Figure 10, per capita income has risen steadily over the past two decades, but it has made only slow gains toward the national average.

FIGURE 10
Kentucky Per Capita Income, 1980-1998
(in thousands & as percent of U.S. average)



Source: Bureau of Economic Analysis

Kentucky's per capita income, however, may be closer to the national average than these data suggest. Some argue that cost of living differences between states could leave incomes unequal. In addition, there may be differences in quality of life, as measured by environmental quality, civic health, crime and other such factors that would also inhibit complete convergence of incomes across states. A recent study by Berger and Blomquist found that after making cost-of-living and quality-of-life adjustments to Kentucky's 1998 per capita income, its convergence to the national average increased from 81 percent to 88 percent.[85]

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[84] G. Andrew Bernat Jr. and Eric S. Repice, "Industrial Composition of State Earnings in 1958-98," *Survey of Current Business* Feb. 2000: 70.

[85] Mark C. Berger and Glenn C. Blomquist, "Kentucky's Per Capita Income: What Should Be the Goal?," in *2000 Kentucky Annual Economic Report* (Lexington: University of Kentucky Center for Business and Economic Research and Gatton College of Business and Economics, 2000) 1-7.

Increasingly, service sector employment is dominating national and state economies. Nationally, robust job growth is expected to continue in the service-producing sector at an estimated rate of 2.8 percent a year.[86] The largest gains are predicted for business services (4.6 million jobs); health services (2.8 million jobs); engineering, management, and other services (1.1 million jobs); and social services (1 million jobs),[87] all of which include high-paying information-driven jobs. An aging population is expected to create a strong demand for health care, as well as health products, and a rising demand for highly skilled residential care is creating the lion's share of new jobs in social services.[88]

Following national trends, Kentucky's economy is beginning to break with the past and move toward greater reliance on service industry employment. In April 2000, an estimated 477,900 Kentuckians were employed in the service-producing sector compared to 320,500 in the manufacturing or goods-producing sector. Kentucky's service industry jobs are concentrated heavily in health services (152,600) and business services (100,500).[89] The largest annual rates of growth in the service sector at the national level are expected to be in computer and data processing (8.1 percent), health services (5.3 percent), residential care (4.6 percent), management and public relations (3.8 percent), and personnel supply services (3.7 percent). The Kentucky Department of Employment Services predicts strong growth rates for numerous health care occupations here at all education levels except those requiring minimal education.[90]

Generally lower-paying jobs in the retail trade component of the U.S. service sector are also expected to continue growing steadily over the coming decade, increasing at a predicted pace of 1.3 percent a year between 1998 and 2008.[91] In Kentucky, retail salespersons head the list of occupations that will create the most annual job openings (2,255) between 1996 and 2006 for those with a high school diploma and some postsecondary training, growing 15.5 percent over the decade.[92] And, as previously noted, cashiers head the list of jobs (3,853) expected to be created in Kentucky that prefer but often do not require a high school diploma.[93] Jobs for cashiers are predicted to grow 22.9 percent.[94]

Manufacturing could be the state's future weak spot if globalization compels more low-skill industries to seek cheaper wages offshore or in other U.S. locales and if automation continues, as expected, to eliminate rather than create jobs in this sector. Between 1997 and 1999, manufacturing accounted for one in three displaced jobs in the nation, a lower rate than that of the 1980s but a proportion that is twice manufacturing's share of employment.[95] However, higher productivity rates and real output growth have moderated predictions of national job losses

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[86] Allison Thompson, "Industry Output and Employment Projections to 2008," *Monthly Labor Review* November 1999: 33-50.
[87] Thompson.
[88] Thompson.
[89] KDES, news release, "Kentucky Labor Market Information," Frankfort, April 2000.
[90] KDES, *Occupational Outlook*.
[91] Thompson.
[92] KDES, *Occupational Outlook*.
[93] KDES, *Occupational Outlook*.
[94] KDES, *Occupational Outlook*.
[95] BLS, "Worker Displacement ..."

in the manufacturing sector,[96] suggesting that the returns to information technology and organizational change are creating manufacturing as well as service industry jobs. BLS predicts that between 1998 and 2008, manufacturing will, as expected, retain its share of output while experiencing a net loss of only an estimated 89,000 jobs, principally in nondurable goods.[97] The apparel industry, a Kentucky stalwart that employed 18,900 people here in April 2000, ranks second nationally in terms of its annual job loss rate, at -4.4 percent a year, but the pace of apparel job losses is expected to be slower than over the 1988-1998 decade.[98] On the other hand, the miscellaneous plastic products sector, where 15,400 Kentuckians were employed in April 2000, is expected to grow at a rate of 1.6 percent per year.[99]

While manufacturers of nondurable goods are predicted to lose 196,100 jobs over the decade, durable goods manufacturers will gain an estimated 107,400 jobs nationally.[100] Electronic components and accessories and miscellaneous transportation equipment are expected to enjoy the highest rates of employment growth in the durable goods sector, which would appear to be good news for Kentucky's manufacturing base. But motor vehicles and equipment manufacturers are predicted to experience a slight national loss of 50,000 jobs over the decade due to moderate output growth, increased productivity, and continued automation.[101] Thus, the future of Kentucky's manufacturing base appears uncertain but far more promising than just a few short years ago.

Nationally, traditional manufacturers have been slow to gain their footing in the New Economy. Though many analysts believed that the gap between traditional and high-tech manufacturers would narrow due to the rapid growth of the economy as a whole, *Business Week* reports that through much of the current expansion, high-tech industries have grown far faster than the rest of the manufacturing sector. By July 2000 the split between the two sectors had actually widened. Real production of high-tech firms rose nearly 50 percent in the first quarter while the remainder of the manufacturing sector, nearly 90 percent, rose by only 1.6 percent. Indeed, traditional manufacturing, where Kentucky has placed many of its hopes for a more prosperous future, hardly grew at all during the early months of the year 2000.[102]

Additionally, some evidence suggests that traditional manufacturers have been slow to use electronic commerce, a circumstance that, over the short and the long term, could adversely affect profitability and competitiveness. In February 2000, the National Association of Manufacturers reported survey results that showed 68 percent of manufacturers were not yet conducting business transactions electronically. While 80 percent of manufacturers reported having a web site, they had not

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[96] Thompson.
[97] Thompson.
[98] Thompson.
[99] Thompson.
[100] Thompson.
[101] Thompson.
[102] Gene Koretz, "U.S. Industry's Dollar Woes," *Business Week* 17 July 2000: 30.

yet begun to use the Internet for business processes.[103] If these data are indeed reflective of the pace of adaptation to the New Economy, the manufacturing sector could continue to experience anemic rates of growth, a consequence that will have a dramatic impact on the Commonwealth's future prosperity.

Like other economic sectors, Kentucky's farm economy is also undergoing demanding and difficult changes. Because tobacco has historically been the state's leading cash crop, recent dramatic drops in the burley tobacco quota have created tremendous instability. At least in part, the global economy, namely cheaper sources of burley tobacco, has played a prominent role in the decline of this long-dominant Kentucky crop. This year, tobacco farmers grew about one third of the tobacco they were growing just three years earlier. As a consequence, "for sale" signs have gone up at many small farms while others have begun to explore alternative crops and farm products. We estimate that a number of counties in the state could be hard hit by the plummeting burley tobacco quota because of their high level of dependence on tobacco as a source of income and their relatively high poverty rates.[104]

Unless research yields new uses for tobacco, the fate of farmers who are unwilling to adopt alternative crops will continue to rise and fall with the fortunes of cigarette manufacturers, who have become the target of widespread public enmity in the United States. Additionally, the tobacco products industry ranks eighth nationally in the rate of job losses it is expected to incur over the 1998-2008 decade, at a rate of 3.1 percent a year.[105] Further, recent data show that global markets that were once expected to counter waning U.S. demand for cigarettes are changing as well. As nations recognize the long-term costs of the health consequences associated with smoking, the world is beginning to turn away from cigarettes. In 1999, the number of cigarettes smoked per person fell by 2 percent worldwide and by 8 percent in the United States.[106]

A decline in farm employment could have a significant adverse effect on some rural areas, particularly if we experience an economic downturn. In 1997, Kentucky ranked fourth nationally in the number of farms, as it did in 1992, and ranked second, behind only North Carolina, in its share of the U.S. tobacco harvest (30.4 percent).[107] Conducted before recent sharp declines in the burley tobacco quota, the 1997 Census of Agriculture found about 8,000 fewer farms in Kentucky than in 1992,[108] a count that some experts believe under-represents the actual number of farms in the state. The number of full-time farms declined by 16 percent, or 6,334 farms,[109] a figure which could drop precipitously by the time the

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[103] National Association of Manufacturers, news release, "New NAM Poll Shows that Despite Advances, Most Manufactures Still Not Using E-Commerce," 22 Feb. 2000.

[104] Michael T. Childress, "Data Foretell Most Vulnerable Tobacco Counties," *Foresight* 7-1 2000: 3.

[105] Thompson.

[106] Lester R. Brown, "World Kicking the Cigarette Habit" news release, Worldwatch Institute, Washington, D.C., 9 May 2000.

[107] National Agricultural Statistics Service (NASS), *1997 Census of Agriculture: Ranking of States and Counties* (Washington: U.S. Department of Agriculture, 1999).

[108] NASS.

[109] Kentucky Agricultural Statistics Service (KASS), *1997 Census of Agriculture, State Profile* (Louisville: U.S. Department of Agriculture, 1999).

next farm count is taken in 2002. The agriculture census also found that the state had lost more than 330,000 acres of farmland over the five-year period between these national counts, a decline of 2 percent.[110]

The decline in farmland is not simply a reflection of a declining farm economy, but rather a reflection of change. Crop yields increased, and the average size of farms in the state increased by 7 percent,[111] a reflection of the shift toward larger agribusiness operations. At the same time, the market value of Kentucky's agricultural products increased 15 percent between 1992 and 1997, with crop sales accounting for the majority (52 percent). Beef cattle remained an important component of the Kentucky farm economy; the state registered the eighth highest inventory of beef cows in the nation.[112] Thus, the outlook for farming appears mixed: small farms are being lost, large farms are becoming still larger, and the overall value of farm products is increasing.

Clearly, the changing nature of farming and the farm economy will compel occupational change. The U.S. Department of Agriculture's Economic Research Service estimates that Kentucky has the ninth highest number of farm workers in the nation,[113] a point of vulnerability as tobacco declines and automation eliminates the need for many farm jobs. By 2006, the Workforce Development Cabinet predicts, jobs for farm workers in the state will decline by 14.3 percent, from 12,409 in 1996 to 10,633 in 2006.[114] The number of farmers is expected to decline even more sharply, from 21,089 in 1996 to 16,800 by 2006, a decline of 20.3 percent.[115]

Farmers are not the only endangered species in Kentucky. The high-wage jobs that once enabled coalfield families to enjoy comfortable, middle-class lives are also fast disappearing. Nationally, coal mining ranks third among industries that are expected to experience the largest percentage decline in their workforce over the 1998-2008 decade.[116] Coal industry employment has declined dramatically in Kentucky since the boom years when employment peaked at more than 49,000 jobs in 1979. By April 2000, the number of jobs for miners in the coalfields had dwindled by 73 percent to just 17,000 jobs.[117] While coal production remained strong well into the 1990s, the limited and largely inaccessible reserves that remain are expected to shorten the current cycle of high productivity. Though an estimated 89 billion tons of coal remains, the extent to which it proves mineable and marketable will determine the life of the industry's future.[118]

While the cornerstones of Kentucky's old economy are crumbling and its ability to leap into the New Economy is far from fully realized, the state's broad-

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[110] KASS.
[111] KASS.
[112] NASS.
[113] U.S. Department of Agriculture Economic Research Service, "Where is Agriculture Important?" *Rural Conditions and Trends*, 2000.
[114] KDES, *Occupational Outlook*.
[115] KDES, *Occupational Outlook*.
[116] Thompson.
[117] KDES, news release, "Kentucky Labor Market Information," April 2000.
[118] Bill Estep, "State Survey Raises Questions about Coal's Future," *Lexington Herald-Leader* 9 May 2000: 1.

based commitment to education and workforce modernization appear to be its best hope for making economic change work for the people of Kentucky.

Inching Toward the New Economy

Clearly, the rise of global communications and trade continues to produce winners and losers, sometimes overnight. While we are beginning to see signs of adaptation to the changed marketplace in Kentucky, most agree that too little of the literal and figurative electricity of the digital economy is present here. We have too few e-businesses and, by most assessments, too little of the entrepreneurial energy or "critical mass" needed to foster more high-tech development.

For example, a recent analysis of how well the states are positioned in their adaptation to the New Economy ranked Kentucky 39th. While the Commonwealth ranked fairly high on various indices of globalization and of dynamism and competition, its overall performance was undermined by the presence of too few knowledge jobs, too many sectors that have not successfully made the digital transformation, and a weak infrastructure to foster innovation. The state received its lowest rankings on the indices of workforce education (49th), the number of scientists and engineers in the population (47th), the percentage of adults who are online (46th at 23 percent), and the number of firms with commercial Internet domains (42nd with 0.13 percent).[119] Though these data are already "old," particularly given the speed of Net time, and they no longer accurately capture such indices as the state's online population, the snapshot of the Commonwealth's position relative to other states helps to illuminate those areas in which public policy needs to focus.

These deficiencies are being met with policy responses at the state and the local level. The Commonwealth's leadership has taken numerous steps to elevate the quality of the state's educational infrastructure at every level, instituting a long-term quest for excellence and successfully placing educational achievement in the state on an upward trajectory. Further, the Kentucky Innovation Act of 2000, based on the research and recommendations of the Kentucky Science and Technology Council, seeks to address some of the gaps in the state's entrepreneurial infrastructure. The Act will fund efforts to build and promote networks of high-tech, research-oriented industries, help manufacturers adapt to the New Economy, train workforces, place new emphasis on the recruitment of high-tech firms and jobs, and focus new attention on research and development.

Moreover, Kentucky's local and university leaders also are taking steps to better position their communities in the New Economy. Their ventures into the New Economy range from Glasgow's early and visionary move to provide public Internet access via its cable television network to fast-growing Lexington's efforts to showcase e-businesses, and from the efforts of the Berea-based Mountain Association for Community Economic Development (MACED) to enable rural Owsley County residents to become familiar with the Internet at kiosks in such public

[119] Atkinson, Court, and Ward.

venues as local groceries to the University of Louisville's creation of a high-tech incubator.[120]

If the New Economy is to show returns in Kentucky, however, Kentucky businesses must use the technologies now driving our economy to their fullest advantage. Some data suggest that Kentucky businesses are embracing these technologies. For example, a survey of Kentucky businesses conducted in 1998 with 364 responding businesses found that 100 percent used computers and that about 80 percent were connected to the Internet.[121] On the other hand, the Center for Business and Economic Research surveyed Kentucky businesses in 1999 to understand their use of and experience with online commerce.[122] They found that about 14 percent of the responding firms (57 of 392) indicated that they sold their products or services online.[123] This is less than half of the 34 percent of U.S. enterprise businesses online in 1999 (see Table 2).

TABLE 2
More US Businesses Move Online

	1998	1999	2000	2001	2002	2003
No. of U.S. businesses online (millions)	1.8	2.2	2.7	3.2	3.7	4.3
No. of U.S. businesses (millions)	6.2	6.5	6.8	7.1	7.5	7.8
% of U.S. businesses online	29%	34%	40%	45%	50%	55%

Source: Forrester Research. These data are based on surveys with 56 national, regional, and local ISPs and hosting companies. These data were published February 1999 at www.forrester.com/ER/Print/Research/Report/0,1338,5677,FF.html

Detailed state-level data about the extent of online business-to-business or business-to-consumer exchanges are not available, but we can look at the number of web sites or registered domain names in Kentucky as an *indicator* of the extensiveness of online exchanges. An examination of the number of registered domain names in Kentucky and surrounding states shows that Kentucky consistently lags behind the U.S. average and most surrounding states (see Figure 11).[124]

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[120] John McGill, "www.hightechhavens/@Kentucky?" *City*, Kentucky League of Cities, Lexington, Kentucky, Summer 2000: 7.

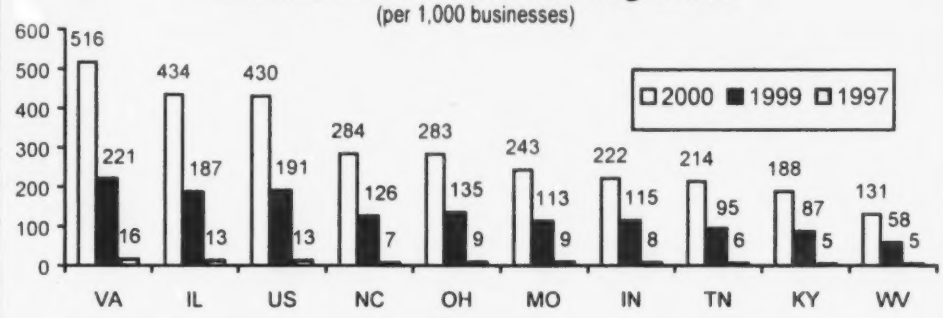
[121] Steven N. Allen, "Computer and Internet Usage at Businesses in Kentucky," *Kentucky Annual Economic Report 1999* (Lexington: University of Kentucky Center for Business and Economic Research, 1999) 63.

[122] Jonathan D. Fisher, "Electronic Commerce at Business in Kentucky," *Kentucky Annual Economic Report 2000* (Lexington: University of Kentucky Center for Business and Economic Research, 2000) 31-5.

[123] Fisher 32.

[124] Pro CD Internet Directory, CD-ROM, (Pro CD Inc., Danvers, MA, 1997). This directory includes more than 450,000 web addresses that were registered between 1990 and 1996. We excluded inactive and noncommerical sites (e.g., .net, .org, .edu, etc.) as part of our search criteria and found 1,009 Kentucky businesses with web addresses. One should note, however, that an examination of the listings reveals duplicates for some businesses, but this duplication does not appear to be widespread. The total number of businesses is the sum of self-employed and businesses with employees in 1996. These data were obtained from the U.S. Small Business Administration (SBA) state profiles at www.sba.gov/ADVO/stats/profiles/. According to the SBA, Kentucky was home to 78,044 businesses with employees and approximately 113,000 self-employed persons in 1996, for a total of 191,044 businesses. The 1999 data on registered domain names by state were obtained online at <http://domainsondisc.com/stats_state2.html on 4 Aug. 2000> and *include* .com, .net, .org, and .edu registrations. The data on the number of businesses by state are for 1998, the most recent available; they were downloaded from the web site <http://www.sba.gov/ADVO/stats/profiles/> on 4 Aug. 2000.

FIGURE 11
Estimated Number of Registered Domain Names, KY and Surrounding States
(per 1,000 businesses)



Source: KLTPRC analysis of Pro CD, Domains on Disc, dotcom.com, and SBA data

In its analysis of the position of southern states in the New Economy, MDC reports that Kentucky consistently trails the national average as well as most southern states in several employment measures. As shown in Table 3, the most recently available data show that the number of information sector and professional, scientific and technical services jobs per 1,000 jobs in Kentucky lags well behind the national average. Additionally, few southern states are as poorly positioned on most measures. Only four states (Louisiana, 11.9; Mississippi, 10.0; North Carolina, 13.0; and South Carolina, 11.7) have fewer information sector jobs, and only Arkansas (16.1), Mississippi (15.2), and West Virginia (18.2) have fewer professional, scientific, and technical services sector jobs. In turn, the projected increase in core information technology jobs predicted to be created between 1996 and 2006 is expected to be smaller in Arkansas (55 percent), Mississippi (54 percent), Oklahoma (55 percent), and South Carolina (56 percent). Finally, several states were found to have fewer high-tech workers per 1,000 private sector workers, including Arkansas (21), Louisiana (15), Mississippi (18), South Carolina (22), Tennessee (20), and West Virginia (19).

TABLE 3
New Economy Jobs, KY and US

	KY	US
Information Sector Employment per 1,000 Jobs, 1997	13.3	19.6
Professional, Scientific & Technical Services Sector Employment per 1,000 Jobs, 1997	19.2	33.3
Projected Increase in Core Information Technology Jobs, 1996-2006	58%	76%
High-Tech Workers per 1,000 Private Sector Workers, 1998	24	46

Source: MDC, Inc., State of the South 2000

The 2000 domain registration data are current to the first quarter of 2000 and were obtained at <www.dotcom.com/facts/usmap.html> on 17 Aug. 2000. For our purposes the relative differences between the states are more important than the absolute number of web sites per 1,000 businesses because the Web is changing and evolving so rapidly that any "snapshot" description is outdated immediately.

The future success and prosperity of Kentucky businesses will depend in large measure on their ability to incorporate and master the lightening quick changes wrought by the technology of today's digital economy. From Main Street retailers to small and large manufacturers, the Internet provides businesses of all types a vital competitive edge. Nationally, retailers, the most vulnerable of enterprises, are realizing significant returns from their entrance into e-tailing. In a summer 2000 survey of more than 1,500 businesses in 16 downtown commercial districts, the National Trust for Historic Preservation found that 14.3 percent of total sales issued from Web sites,[125] a figure that has likely increased in the intervening months. "Five or six years ago, Main Street businesses had virtually no Web presence," observed Kennedy Smith, Director of the National Trust's Main Street Center. "Now they are discovering the means to expand retail sales on the Web. This presence is an important step for Main Street, where even a 5 percent increase in annual sales can be key to success or failure."[126]

If Kentucky businesses continue to lag behind in embracing these technologies, it will become increasingly difficult to gain ground relative to other states as we move from the "old economy" to the "new economy." Thus, our approach to development must be informed by a fuller understanding of the increasingly important role that information technology is playing in the formation of new businesses and the growth of established ones. Moreover, our approaches to development and recruitment at the local and the state level must become better informed about the needs of the e-businesses we hope to attract.

Employment and Wage Trends

Most analysts conclude that the very forces that have enabled today's explosion of jobs in the United States, namely information technology and globalization, also figured prominently in depressing wages over two and a half decades. Only during the 1996-1998 period did wages begin to outpace inflation, culminating in a 2 percent increase in 1998.[127] Over the previous 25 years, technology is believed to have eliminated millions of redundant jobs and gradually raised the rate of return for high skills. At the same time, globalization led to increasingly fierce competition and an international bidding war for labor that has resulted in the migration of low-skill industries to lower-cost shores.

Many of these industries once provided low-skill jobs at good wages in places like Adair and Franklin counties, where garment manufacturers have shuttered factories that employed hundreds of Kentuckians. Sewing machine operators, closely followed by farmers, lead the Workforce Development Cabinet's list of

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[125] "National Trust's Main Street Survey Shows Internet's Key Impact on 'Mom and Pop' Retail Sales," news release, National Trust for Historic Preservation Web site, 6 Sept. 2000, 22 Sept. 2000 <http://www.nthp.org/main/frontline/pr_mainstFull.htm>.

[126] "National Trust's ..."

[127] USDOL, *Futurework*. (These wage data are for nonagricultural, production and nonsupervisory workers only.)

the 25 occupations that are expected to lose the largest number of jobs in the state between 1996 and 2006.[128]

In general, the employment options for low-skill workers in today's economy are limited to lower-paying service sector and retail sales jobs. In the category of occupations that prefer but do not always require a high school diploma, by far the most jobs between 1996 and 2006 will be for cashiers (3,853), a job that was disproportionately held by women in 1990. In Kentucky, the percentage of cashiers who were female was higher than at the national level, 85 percent compared to 78 percent.[129] Jobs for fast food preparation and service workers (2,169), helpers and laborers (1,580), food preparation workers (1,129), and janitors and cleaners (1,002) round out the top of the list.[130]

In addition to the larger forces of globalization and advancing communications technology, other influences have slowed wage growth. The decline of unions in the United States and the attendant erosion of worker bargaining power is believed by some to have slowed wage growth. Still other analysts point to the entry of millions of women and immigrants into the labor force, principally at lower-wage jobs, which has skewed supply, as a factor in holding wages in check. Millions of immigrants, many of whom possess minimal skills, have been drawn to the dynamic U.S. labor market. Without these workers, however, today's heated economy would have exhausted its labor supply long ago and ground to a halt. Certainly, without Hispanic workers, Kentucky's farm economy would likely have suffered a far more devastating blow than the drought of 1999. To a lesser but growing extent, other industries in the state are also increasing their reliance on immigrant workers.

A *New York Times* report concludes that increased corporate mobility *within the United States* also may have figured in the slow response of wages to the tight labor market. Free to locate anywhere with access to the Internet, many firms are opting for locations that enable them to shave labor costs or capture a pool of available workers in high unemployment areas. According to *Site Selection* magazine, internal corporate migration has doubled since 1996 to more than 11,400 annual moves.[131] Similarly, in response to an American Management Association survey, 42 percent of CEOs reported that their firms had recently moved or were actively considering a move.[132] Clearly, Kentucky's lower wage scale has attracted many firms to our state in recent years, but, just as offshore locations have beckoned garment manufacturers, the new arrivals offer no guarantee that they will stay. And corporate mobility, be it national or global, has another effect. As Harvard economist Lawrence Katz observes, "The threat of it helps to hold down wages."[133]

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[128] KDES, *Occupational Outlook*.
[129] Billie M. Sebastian, "The Employment Outlook for Kentucky Women," *The Future Well-Being of Women in Kentucky* (Frankfort: Kentucky Long-Term Policy Research Center, 1999).
[130] KDES.
[131] Uchitelle, Louis, "A New Corporate Wanderlust Puts a Quiet Brake on Salaries," *New York Times on the Web* 24 July 2000, 24 July 2000 <http://www.nytimes.com/library/financial/072300corporate-migration.html>.
[132] Uchitelle, "A New ..."
[133] Uchitelle, "A New ..."

Though family income has grown, albeit very slowly, the growth has largely been a byproduct of more wage earners and more hours worked, according to the U.S. Department of Labor.[134] Between 1989 and 1998, total family work hours for a middle-income American family increased 246 hours, or about six full-time weeks of work a year, according to the Economic Policy Institute's *The State of Working America*.[135] A middle-income African-American family worked almost 500 hours more per year than white families.[136]

The noticeable trend toward more year-round work can be attributed largely to the expanding role that women are now playing in the labor force.[137] Between 1967 and 1998, the percentage of U.S. women participating in the labor force increased dramatically, from 41 percent to 60 percent, and the percentage of women who work year round also rose sharply, from 52 percent to 70 percent. At the same time, overall male labor force participation has actually declined by 5 percentage points, and the percentage who work year round has increased only slightly, from 74 percent to 77 percent.[138] In recent years, the labor force participation of women in Kentucky has increased at a faster pace than at the national level, a trend that may contribute to the lack of growth in the lower-wage range. Berger and Chandra find that the labor force participation rate of women in Kentucky has been increasing faster than the national average while male labor force participation has been declining at a faster rate than nationally.[139]

While the growing presence of women in the labor force has enabled many families to stay financially afloat, single-parent households, usually headed by women, remain the poorest of the working poor. And a recent RAND Corporation study finds not only that women are disadvantaged by lower earnings, but also that motherhood appears to be associated with reduced earnings. RAND found that having two children, for example, lowered a woman's earnings by 19 percent while one child lowered her earnings by 13 percent.[140] Based on longitudinal studies, economist Jane Waldfogel finds that while women without children earn about 90 percent of what their male counterparts earn, mothers earn only about 73 percent.[141]

Recently, after-inflation wages have begun to lift out of their prolonged period of stagnation. Though pay increases have outpaced inflation during the recent boom, growth in hourly earnings did not resume until 1996-1998 after losing ground against inflation since 1973, according to the U.S. Department of Labor.[142] Bureau of Labor Statistics economists Ilg and Haugen report that while workers at the lower and upper ends of the wage distribution saw their earnings increase over

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[134] USDOL, *Futurework*.
[135] Lawrence Mishel, Jared Bernstein, and John Schmitt, *The State of Working America 2000-01* (Ithaca: Cornell University Press, 2001).
[136] Mishel, Bernstein, and Schmitt.
[137] USDOL, *Futurework*.
[138] USDOL, *Futurework*.
[139] Berger and Chandra.
[140] RAND Corporation, "Job Continuity Among New Mothers," *Research Brief*, Santa Monica, CA, Spring 2000.
[141] Jane Waldfogel, "The Effect of Children on Women's Wages," *American Sociological Review* April 1997.
[142] USDOL, *Futurework*.

the decade, mid-level wage earners made no gains in real earnings due to losses during the early part of the decade.[143] Those in the highest earnings group saw their median income rise modestly, by 6.3 percent over the decade, while those in the lowest income group realized the highest wage gain over the decade, 11.6 percent, as their wages grew after 1992.[144] In their analysis of workforce trends of the 1990s, Mishel, Bernstein, and Schmitt found that overall average hourly wages grew 2.6 percent a year between 1995 and 1999, a significant increase over the glacial pace of wage growth in the early 1990s when average hourly wages grew by just 0.6 percent a year.[145] However, the value of employer-paid benefits actually declined 1.6 percent between 1995 and 1999, lowering total compensation to 1.9 percent a year.[146]

Some believe that the international competition for cheap labor that globalism has enabled is eroding the standard of living in the United States. Families have been able to stay afloat not because of rising earnings but because, on average, they each send more workers into the labor force.[147] Families with two parents who work at least part of the time are now the majority (51 percent) in the labor force; in the mid-1970s, only a third of families had two working parents.[148] As the number of wage earners per family has increased, time spent as a family has declined. Jobs may be plentiful in today's economy, but the quality of life they buy, particularly at the lowest rungs of the earnings ladder, may not be as desirable as the glowing reports of economic health suggest.

Because the U.S. labor market has been slow to produce rising wages and improved benefits for the average worker, many families and households continue to struggle.

A Still Fragile Social Contract

In spite of plentiful jobs and the pressure that tight labor markets have exerted on employers, as we reported four years ago in *Exploring the Frontier of the Future*,[149] the social contract between employers and employees continues to fray. While downsizing has receded in this booming economy,[150] the damage, some argue, has been done. Older workers, BLS finds, remain particularly vulnerable, as they are less likely to find comparable employment after job displacement.[151]

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[143] Ilg and Haugen.
[144] Ilg and Haugen.
[145] Mishel, Bernstein and Schmitt, 116.
[146] Mishel, Bernstein and Schmitt, 116.
[147] Bob Herbert, "Working Harder, Longer," *New York Times on the Web* 4 Sept. 2000, 5 Sept. 2000 <http://www.nytimes.com/library/opinion/herbert/090400herb.html>.
[148] Tamar Lewin, "Now a Majority: Families with 2 Parents Who Work," *New York Times on the Web* 24 Oct. 2000, 24 Oct. 2000 <http://www.nytimes.com/2000/10/24/national/24FAMI.html>.
[149] Michal Smith-Mello, "Negotiating the New Social Contract," in Michael T. Childress, Billie M. Sebastian, Peter Schirmer and Michal Smith-Mello (editors) *Exploring the Frontier of the Future* (Frankfort: Kentucky Long-Term Policy Research Center, 1996) 163.
[150] Gene Koretz, "Job Cuts Decline—But So Do Exits," *Business Week* 24 July 2000: 28.
[151] BLS, "Worker Displacement ..."

Today, employees appear to have gained advantage in the economy, as employers in many labor markets are desperate for workers at every skill level. They have become highly mobile and, some argue, very fickle, taking new jobs for even small raises in wages and salaries. Some employers are now taking steps to ensure against the losses incurred when employees leave with little or no notice, a "bridge-burning" and previously unacceptable practice that is now reportedly commonplace.[152] Job-hopping, *Barron's* magazine suggests, has become "the national sport" in the New Economy. Former Secretary of Labor Robert Reich counters that employee behavior is merely an adaptation to disappearing job security and the absence of employer loyalty.[153] Because the global economy demands that firms be nimble enough to change or face extinction, few are prepared to promise workers security. Particularly for blue-collar labor forces, job security remains a central issue, one that unionized labor forces in recent years have made a centerpiece of collective bargaining.

Employee loyalty has not been strengthened by long-term wage and benefit trends. While more employees now have access to health insurance, health care benefits have changed substantively over the years as employers have shifted more of rising health care costs to employees, a move that has, in the past, discouraged many from enrolling in plans. Employer-financed family health plans have become a rare offering and coinsurance and copayments are now the norm.

Overall, participation in employer-sponsored pension plans has also declined and changed, as employers have trimmed costs and shifted more responsibility to the employee. About half of the private-sector labor force is not covered by a pension plan, and the rising ranks of contingency workers and low-wage workers are far less likely to have plans in place.[154] So-called "defined-contribution" pension plans, which depend on employee contributions and the performance of the funds in which they invest, have more than doubled in the past 25 years, from about 33 percent of covered workers in 1975 to 80 percent. "Defined-benefit" pensions, which are usually partly financed and managed by employers and reward employee seniority, have declined sharply, from 87 percent of covered workers in 1975 to 50 percent.[155]

The labor shortages of recent years have, however, placed added competitive pressures on employers, who are increasingly using benefit packages to attract and retain employees. Some analysts believe that a trend is also underway toward quicker access to pension and profit-sharing plans for new employees, rather than the customary requirement of a prescribed tenure of employment. According to the Profit-Sharing/401(k) Council of America, which represents sponsors and providers of plans, 40 percent of companies permitted their new employees to join 401(k) plans within the first year of their employment in 1999, compared to 32 percent in 1998.[156] During 1999, employee-sponsored health care benefits also fu-

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[152] Forster.

[153] Tom Walker, "Employee Loyalty Just Isn't What It Used to Be." *Lexington Herald-Leader (Business Monday)* 31 July 2000: 11.

[154] USDOL, *Futurework*.

[155] USDOL, *Futurework*.

[156] Sana Siwolop, "At More Companies, Benefits Without the Wait," *New York Times on the Web* 27 Aug. 2000, 28 Aug. 2000 <www.nytimes.com>.

eled the first increase in the nation's insured population since 1987.[157] In the short run, even an anticipated sharp rise in the 2001 cost of health care benefits is not expected to alter employer benefit packages in what continues to be a tight labor market. However, it may cause more employees to decline health insurance due to the rise in their share of costs.[158]

Though plentiful, many of the jobs in today's labor market, particularly those at the bottom of the wage ladder, are still absent the benefits or the opportunities for advancement employees desire. Employee mobility remains high, and, in turn, many employers are discouraged from making investments that might strengthen the employer-employee relationship. In short, the social contract remains in flux.

Greener Pastures?

A potential but seldom acknowledged benefit of the ascending digital economy is a cleaner, healthier environment. Though we are far from the "paperless" society predicted long before the advent of the Information Age and discarded computer equipment presents our newest recycling challenge, the footprint we leave will likely grow smaller as information, rather than goods, becomes our principal product. Over time, this process of "dematerialization," as well as the realization of myriad efficiencies that are a direct byproduct of electronic communications, could dramatically reduce waste and the consumption of energy and other natural resources.

Ultimately, every query for information via the Web or CD-ROMs is part of the force of "dematerialization." While our attachment to books, magazines, newspapers, and other written materials remains strong, more and more of them are being displaced by electronic versions. Today, major newspapers and news networks have made their presence known on the Web, joining an ever-changing cast of "zines" and newscasts that came to life on the Net. Relatively tiny by comparison, a single CD-ROM holds a complete encyclopedia or an entire body of work, such as that which the Kentucky Long-Term Policy Research Center now publishes annually. The potential scope of dematerialization, Cohen observes, is evident in the example of the "lowly" telephone directory. Every year, only 10 percent of the 450,000 tons of telephone directories that are scrapped are recycled.[159]

Moreover, electronic versions of documents can be corrected, revised, and updated with relative ease, thus providing more accurate, more timely and more accessible information. Custom publishing, a fast growing component of the college textbook business,[160] is a harbinger of things to come throughout education and training, eliminating the widespread problem of outdated textbooks and perhaps

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[157] U.S. Cen. s Bureau, *Health Insurance Coverage 1999* (Washington: U.S. Department of Commerce, Sept. 2000).

[158] Milt Freudenheim, "Consumers Facing Sharp Rise in Health Costs," *New York Times on the Web* 10 Dec. 2000, 11 Dec. 2000 <http://www.nytimes.com/2000/12/10/business/10CARE.html>.

[159] Nevin Cohen, "e-Commerce and the Environment," *Environmental Perspectives*, Tellus Institute, Boston, MA, April 2000.

[160] Cohen.

ultimately eliminating textbooks altogether, as more students use computers in classrooms. And electronic documents can yield information far more rapidly. A Net search for a telephone number or a street map, for example, can be faster, more efficient, and more current than "looking it up" the old way.

As computers become broadly accessible and society acclimates to this new medium of communications, we can expect more documents to be made available only in an electronic medium or printed in far smaller quantities. Results from the 2000 Census, for example, will be made available on the Internet as data become available and on CD-ROMs and even DVDs, but far fewer printed copies of individual reports are planned.[161] Likewise, we can expect digital photography and music to be used more widely as the medium is refined. In the process, a number of products and the manufacturing processes behind them will be displaced or scaled back. In the case of photographic film alone, a reduction in its manufacturing, use, and processing will result in a substantial environmental benefit.[162]

Because business-to-business (B2B) electronic commerce has advanced at a far more rapid pace than consumer retail sales over the Internet, a quiet, as yet unmeasured environmental benefit is already being realized. By communicating electronically and marketing via the Web, businesses deal more efficiently with customers and suppliers, eliminating unnecessary paperwork, travel, and fuel and materials consumption. Electronic billing, for example, saves an estimated 50 to 75 cents per bill and another $1 in handling costs.[163] Information technology and B2B have also made just-in-time supply methods more efficient, enabling more accurate forecasting of industrial needs and more timely communications with vendors, further reducing the need for warehousing space and materials transportation.

Additionally, the customization of industrial products that often contain potentially harmful ingredients is expected to eliminate the need for one-size-fits-all products that are costly to manufacture, manage, store, and dispose of. The tailoring of such products as cleansers to very specific industrial needs is expected to reduce many hazardous and potentially toxic materials used widely now. Moreover, businesses will realize significant savings as they narrow the range of materials they purchase, handle, store, and manage safely. Similarly, electronic communications now help facilitate cooperative efforts to use and reuse industrial waste and byproducts and thus help reduce the environmental impact of hazardous waste.

The process of dematerialization as well as the extraordinary efficiencies realized via electronic communications can be expected to marginalize and even eliminate whole industries and occupations. An estimated one third of all branch banks, for example, will be eliminated by electronic banking, according to the American Bankers Association.[164] In their place, however, job and business opportunities that demand higher skills are likely to emerge.

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[161] U.S. Census Bureau, "Introduction to Census 2000 Data Products," brochure, U.S. Department of Commerce, and "Census 2000 Is History: What Comes Next?" conference, Kentucky State Data Center/Kentucky Population Research Program, Louisville, 16 Aug. 2000.

[162] Cohen.

[163] Cohen.

[164] Cohen.

Of course, the growth of an information-based economy is not without its environmental downside. Product buying via the Internet is dramatically increasing the amount of packaging and the need for transportation of goods and thus increasing our consumption of fuels and raw materials and contributing substantially to waste and pollution. Moreover, some question the long-term environmental cost of undermining an already established infrastructure.[165]

If our wired and soon-to-be wireless economy ultimately liberates a substantial portion of the workforce from place, the subsequent migration of some portion of the population could simply extend the problems associated with urban areas outward into more rural areas. While the arrival of more people in some rural places would be good economic news, it will not always be good environmental news. From losses of wilderness and forestlands to potentially unmanageable stresses on poorly developed public infrastructures, problems that are now largely concentrated in urban and suburban areas could become more widespread.

Growth is provoking more and more public opposition. What has come to be termed "sprawl," has assumed new prominence in the political consciousness of Americans. How we grow rather than how can we grow has become an issue in fast-growing cities like Lexington, where many want to preserve green space and control future growth. A close relative to environmental issues, sprawl now ranks highly on citizen priority lists in many locales. Central to these issues as well as many of the economic issues we confront is the question of how we balance the important but short-term gains of today against the long-term interests of the future.

Finally, the Worldwatch Institute, which reports annually on environmental trends, sees a threat to the environment in inequalities of wealth, power, opportunities, and survival prospects, including the so-called "digital divide" which we examine in this report.[166] The wealthy minority, the Institute argues, is largely responsible for the excessive consumption that hastens environmental decline. From carbon emissions that result from increased reliance on automobiles and fossil fuels to the decline of wildlife habitat linked to the use of paper and wood products, from the proliferation of synthetic chemicals to deteriorating water supplies, the Institute warns, a number of trends must be reversed if we are to reclaim the momentum toward environmental integrity and sustainability. How well we prepare for what lies ahead ultimately will determine whether the economy of the future minimizes such degradation or hastens it.

Conclusion

While change has always been with us, its pace may never have been as relentless and insistent. It has been the one constant in our lives over the whirl of the past decade. Indeed, the breadth of change we have witnessed would have seemed inconceivable just a few short years ago. Technology

[165] "E-commerce: Friend or Foe of the Environment?" CNN.com, 12 Dec. 2000, 18 Dec. 2000 <www.cnn.com>.

[166] Lester R. Brown, Michael Renner and Brian Halweil, *Vital Signs 2000* (Washington: Worldwatch Institute, 2000).

has altered commerce and communications so dramatically that some of the staples of American life may soon become relics of the past, alongside black and white televisions and rotary telephones. From long-distance telephone calls to job hunting and hiring, a fully wired America will likely do things altogether differently. Already, in the span of a few short years, what matters to us most has changed a great deal just as what's expected of us has changed.

In many ways, the 2000 presidential campaign was the most public manifestation of the extraordinary change that technology, globalization, and rising prosperity have wrought in the recent U.S. economy and society. As the headline from a mid-year *New York Times* article about the unusual dynamics of the 2000 presidential campaign pronounced, "Money changes everything."[167] And indeed it has. The youngest of today's voters have only known boom times in their adult lives. A campaign that ordinarily would have turned on the health of the economy instead pivoted on how best to spend an uncertain federal government surplus—$4.6 trillion, more or less, over the next 10 years.[168]

At the same time, old political standards such as jobs and crime lost political currency. In most locales, jobs still go begging, and crime rates have declined sharply even in the nation's most crime-ridden inner cities. Only recently, states were keenly focused on building a sufficient number of prisons to house a growing inmate population. Now some states worry more about what to do with excess prison capacity and how to meet the cost of caring for aging and sick prisoners. Confirming the intuitions of most, the Economic Policy Institute found in a regional analysis that low unemployment rates and rising wages are directly linked to declining crime rates.[169] Thus, plentiful jobs and decent wages, perhaps more so than crime and corrections policies, have neutralized what was a top public and political priority. As if we needed it, plummeting crime rates offer yet another reason to sustain today's economy.

In myriad ways, the buoyant economy of the late 1990s has given us a glimpse of the possibilities that broad prosperity could hold for our state and our nation and, indeed, for the world to which we are now so closely linked. In the coming years, we will be challenged to build on that promise, to capture greater economic opportunity, to extend the reach of prosperity, and to address the inequities that continue to block our path to progress.

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[167] Richard W. Stevenson, "Money Changes Everything," *New York Times on the Web* 18 June 2000, 19 June 2000 <http://www.nytimes.com/library/review/061800fed-funds-review.html>.

[168] Congressional Budget Office, "The Long-Term Budget Outlook," Congress of the United States, Washington, D.C., October 2000.

[169] Bob Herbert, "The Crime Fighter," *New York Times on the Web* 20 July 2000, 20 July 2000 <www.nytimes.com>.

PERSISTENT INEQUALITIES

The test of progress is not whether we add more to the abundance of those who have much; it is whether we provide enough for those who have little.

—Franklin D. Roosevelt, 1937

Glittering as it may seem, today's economy has left many working poor families wondering what all the fuss on the nightly news is about. While the robust growth of the past five years has begun to reverse a decade-long drift into deepening poverty,[170] it has barely budged many persistent inequalities. The continuing trend of income inequality is particularly acute in Kentucky, which has one of the nation's widest gaps between high- and low-income families.[171] Wealthy Kentuckians are faring well in today's economy, increasing their incomes at a pace equal to the national average and above that of many states, but, our analysis finds, the poor continue to fall further behind.

Arguably, our society and our economy offer citizens from all walks of life equal opportunities to choose freely paths to prosperity. Nevertheless, an enormous body of literature confirms Kentucky's experience throughout modern history: poverty is not without its consequences.[172] They range from obvious gaps in quality of life to the subtle erosion of future potential. Poverty routinely leaves a legacy. It adversely affects the choices individuals make as well as the environments in which they live, and it exacts a cost on society at large. Numerous studies now show that those who live in poor and low-income households are far less likely to have access to the very tools that enable escape from poverty—information technology and postsecondary education. And, in spite of the first gain in health insurance among the general population since 1987, the uninsured population of poor Americans remained statistically the same in 1999 as in 1998.[173] For these and many other reasons, persistent inequalities remain the focus of extensive public and academic research and an issue of concern to Kentucky policymakers.

Here, we examine the extent of these inequalities in Kentucky as they compare to the nation and as they are manifested in income inequality and access to information technology, postsecondary education, and health care.

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[170] Poverty rates in Kentucky declined from 19 percent in 1989 to a three-year average of 13.8 percent for 1997-1999, according to the U.S. Census Bureau <www.census.gov/hhes/poverty/poverty99/pv99state.html>.

[171] Jared Bernstein, Elizabeth C. McNichol, Lawrence Mishel, Robert Zahradnik, *Pulling Apart* (Washington: Center for Budget and Policy Priorities and Economic Policy Institute, January 2000).

[172] Greg J. Duncan and Jeanne Brooks-Gunn, editors, *Consequences of Growing Up Poor* (New York: Russell Sage Foundation, 1997).

[173] U.S. Census Bureau, *Health Insurance Coverage 1999*.

Trends in Income Inequality

A growing gap between the economic benefits realized by the wealthiest and the poorest Americans, which first surfaced in the late 1960s or early 1970s, persists. The fundamental nature of what has come to be referred to as income inequality was starkly illustrated in a mid-2000 analysis of Internal Revenue Service data by *The New York Times*. These tax data showed that a record number of U.S. families had reported six-figure annual incomes. While this evidence of rising wealth bodes well for the future of the nation, the analysis also found that these high-income families had seen their share of the nation's economic pie expand from 34.2 percent to 36.9 percent in the course of just one year, from 1997 to 1998. Though the number of families with incomes below $15,000 a year declined by 3 percent, again very good economic news, their average incomes grew by only 0.6 percent, below the rate of inflation.[174]

In one of the most recent reports on income inequality in the United States, Mishel, Bernstein, and Schmitt conclude that the divide continued to grow in the economic boom of the late 1990s but at a slowed rate, and that the structure of income inequality has changed. The poor and low-wage earners have made strong gains relative to those in the middle, they conclude, but the nation's highest wage earners have continued to pull away.[175] While many point to the rising number of Americans now investing in the stock market as a measure of spreading prosperity, these researchers conclude that debt now outweighs stock assets.

> *The net worth of the typical household rose about $2,200 in the 1990s—from $58,800 in 1989 to $61,000 in 1998. While this household's assets grew modestly—stock assets were up by $5,500 and nonstock assets by $8,500—its debt rose as well, by $11,800. Thus, the relatively modest gains in stock and nonstock assets combined with the offsetting rise in household debt meant that the 1990s were far less generous to typical households than business-page headlines often suggest.*[176]

Another recent study underscores these findings, concluding that, in the event of an economic downturn, the poor will be hard hit to meet their mounting debt obligations. While only 17 percent of poor families had credit cards in 1989, 36 percent had at least one card by 1995; monthly balances soared from $343 to $1,380; and the average monthly charge for poor families that carried a balance rose to $236.[177] In late 1999, *Business Week* reported that total household debt had reached 98 percent of total disposable income, a substantially higher level of in-

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[174] David Cay Johnston, "IRS Figures Show Spread of Prosperity," *New York Times on the Web* 28 June 2000, 28 June 2000 <http://www.nytimes.com/library/financial/062800taxayers-income.html>.
[175] Mishel, Bernstein, and Schmitt.
[176] Mishel, Bernstein, and Schmitt.
[177] Gene Koretz, "Plastic Puts the Poor at Risk," *Business Week* 10 Jan 2000: 36.

debtedness than was witnessed during the 1980s, when total debt was only 80 percent of disposable income.[178]

Though quality of life continues to improve for most Americans, many low-wage workers and their families have only recently begun to realize after-inflation income gains from the first real wage increase in more than two decades. At the same time, high-wage earners who have enjoyed the fruits of investment income have realized remarkable economic gains. The stubborn persistence of this trend indicates that the relatively small income gap of the 1970s will not likely be seen again in the near future. Moreover, we find, income inequality is more pronounced in Kentucky than in much of the rest of the country.

Many ask why we should be concerned about income inequality, about the worsening of circumstances that are characteristic of a capitalistic system. And, indeed, while polls show strong support in five European countries and Japan for policies that reduce income inequality, only about a quarter of Americans express the belief that government should address this issue.[179] Nevertheless, rising income inequality may be reason for significant concern.

While some studies conclude that no divide exists when wealth or standard of living, as opposed to just income, is analyzed, or that the divide has been overstated,[180] still others find that income inequality is associated with many social ills, the consequences of which are likely to permeate society at every income level. Moreover, the past economic successes of some nations have been attributed in part to greater income equality.[181] Over time, as the experiences of countries with large income disparities have shown, pronounced socioeconomic inequality undermines trust of government and inhibits participation in the democratic process. Ultimately, unequal levels of political influence break down the democratic process, as those at the lower end of the income distribution lose interest in a seemingly inaccessible economic system and trust in those institutions that support it. Further, large income gaps reduce social cohesion, as families from varying backgrounds become less and less capable of empathizing with those from different economic circumstances.[182]

Beyond the larger issues of social stratification, other well-documented but not well-understood outcomes also have been linked to income inequality. A recent conference on income inequality sponsored by the Federal Reserve Bank of New York highlighted a number of studies showing these associations. In addition to obvious disparities in quality of life, sizeable income gaps have been found to be associated with poor health outcomes, poor schools, substandard housing, and unsafe communities. In addition to the clear relationship between health and so-

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[178] Michael J. Mandel, "Is the U.S. Building a Debt Bomb?" *Business Week* 1 Nov. 1999: 40-42.

[179] Gary Burtless, "Growing American Inequality: Sources and Remedies," *Brookings Review* 17.1 (1999): 32.

[180] John C. Weicher, "The Rich Are Getting Richer—and So Is Everybody Else," *Hudson Policy Bulletin* July 1996, 28 June 2000 <http://www.hudson.org/hpb7-96.htm>.

[181] Dani Rodrick, "Getting Interventions Right: How South Korea and Taiwan Grew Rich," Working Paper No. 4964, National Bureau of Economic Research, Inc., Cambridge, Massachusetts.

[182] Bernstein, McNichol, Mishel, and Zahradnik.

cioeconomic status evident in most studies,[183] some studies have found a correlation between higher mortality rates, lower life expectancies and the actual income gaps themselves.[184]

Inadequate housing quality and quantity also have been found to be the result of declining incomes at the bottom of the income scale and rising housing prices, which are characteristic of a growing economy such as ours. Income disparities also give rise to geographic disparities, as wealthier families move to suburbs, taking with them tax dollars that support local schools and local government services.[185] From poverty to substandard housing to undereducation, income inequality is believed to be an underlying force behind many of the social and economic problems we routinely resolve to address. Thus, we explore the extent of income inequality in Kentucky as compared with national averages.

It is important to note, however, that people are not always locked into an income percentile for their entire lives. A 1992 study by the U.S. Department of Treasury, based on a nationwide sample of 14,351 income tax returns filed from 1979 through 1988, suggests there is considerable mobility across income levels. Of the people in the lowest income quintile in 1979, 21 percent rose to the second quintile, 25 percent to the middle, 25 percent to the second-highest, and 15 percent moved up to the top quintile. In other words, 86 percent of those in the bottom income quintile in 1979 had managed to raise their incomes by enough to move to a higher quintile by 1988. Still the gap between the highest and lowest quintiles is larger today, meaning that people in the lower quintiles have more ground to make up than they would have in 1979.

Income Inequality in the National Context

Compared with the dramatic increases in income inequality of the 1980s and 1990s, variations in U.S. income distribution were relatively small following World War II until the late 1970s. Thus, the public demonstrated little interest in the composition of income. More recently, however, significant attention has been devoted to income distribution in the popular media, as well as in academic, policy, and other arenas, as a result of the substantial increase in income inequality that has occurred over the last quarter century. Census Bureau statistics show a decline of 7.4 percent in family income inequality, as measured

[183] See, for example: Centers for Disease Control and Prevention, *Health, United States, 1998* (Washington: Department for Health and Human Services, 1998).

[184] "Income Distribution, Socioeconomic Status and Self-Rated Health: A U.S. Multi-level Analysis," news release, Harvard School of Public Health, 5 Oct. 1998, 14 July 1999 <www.hsph.harvard.edu/press/ releases/press090498.htm>; Norman Daniels, Bruce Kennedy, and Ichiro Kawachi, "Justice is Good for Our Health," *Boston Review* Feb/Mar 2000, 25 July 2000 <http://bostonreview.mit.edu/BR25.1/daniels.htm>.

[185] Bernstein, McNichol, Mishel, and Zahradnik 3.

by the Gini index[186] for the United States from 1947, to an all-time low in 1968. However, income inequality increased by 22.4 percent from 1968 to 1994.[187]

Growing disparities have occurred among incomes at all levels, not just the extremes of the distribution. In their analysis of incomes of lower- and upper-"middle-class" families in the United States, Danziger and Reed found that income at the 75th percentile level increased from 2.5 to 3.0 times income at the 25th percentile level between 1973 and 1997.[188] However, the disparities between the very poor and very rich were even more extensive. From 1979 to 1996, Burtless, for example, found income for families at the 95th percentile increasing from 13 to 23 times income at the 5th percentile. During this same period, income at the 95th percentile increased from three to four times the median income.[189] More recently, the top 1 percent of households saw their share of total household net worth increase from 30.1 percent in 1992 to 34 percent in 1998, while the share held by the bottom 90 percent of households fell from 33 to 31.3 percent during this same period.[190]

State-level income distribution parallels these trends. A recent report from the Center for Budget and Policy Priorities analyzes changes in income distribution for income quintiles in each of the 50 states over the last two business cycles.[191] This report finds that from the late 1970s to the late 1990s, the gap between the average income of families in the top quintile and the average of the bottom increased for 46 of the 50 states analyzed. In 18 of these 46 states, the poor grew poorer as the rich grew richer. Incomes of all families grew in the remaining states, but the wealthier families experienced larger growth rates in income than those at the bottom rung of the income ladder. Furthermore, 10 states saw the average income of the top fifth of families grow to 11 times the average income of the bottom fifth by the late 1990s. Kentucky ranked 10th among this group. Our state also lagged behind the southern region, as the average income of the bottom fifth of families in five other southern states grew at a faster rate than the income of those families in Kentucky. Kentucky made a favorable showing among its wealthiest families relative to other states, however, enjoying a greater average income for the top quintile than the averages for 19 other states.[192]

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[186] The Gini index is one measure of how far a given income distribution is from equality. It ranges from 0.0, when every family has the same income, to 1.0, when one family has all the income.

[187] Daniel H. Weinberg, "A Brief Look At Postwar U.S. Income Inequality," *Current Population Reports P60-191 Series* (Washington: U.S. Census Bureau, Household Economic Studies, June 1996) 1-4.

[188] Sheldon Danziger and Deborah Reed, "The Era of Inequality Continues," *Brookings Review* 17.4 (1999): 15-17.

[189] Burtless 32-33.

[190] Gene Koretz, "Surprise—The Rich Get Richer," *Business Week* 19 June 2000: 38.

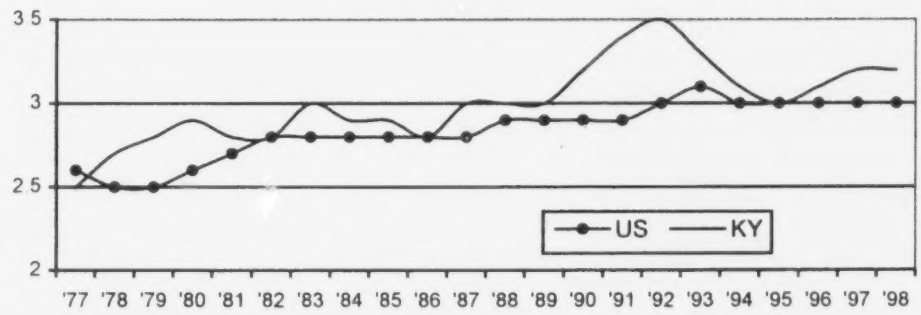
[191] Income quintiles are summary statistics which divide the families in a sample into five intervals, each containing 20 percent of the data. The five groups are computed by ordering the incomes from smallest to largest and then finding the values below which fall 20 percent, 40 percent, 60 percent and 80 percent of the families. The average income of each of the five groups is used as the income of that quintile.

[192] Bernstein, McNichol, Mishel, and Zahradnik 34-35.

Income Inequality in Kentucky

Using data on family income from the March Current Population Survey, we examine trends in income inequality for Kentucky and the rest of the country. Following Danziger and Reed, we examined the ratio of family income at the 75th percentile to that of the 25th percentile or the relative income gap between the upper and lower "middle class."[193] A comparison of ratios for Kentucky and the United States over the 1977-1998 period is shown in Figure 12.[194] In 1977, Kentucky and the United States show similar ratios, with income at the 75th percentile approximately 2.5 times greater than income at the 25th percentile. Over the next two decades, the gap widens as the income ratios increase to values of 3.1 and 3.0 in 1997 for Kentucky and the United States, respectively.

FIGURE 12
Ratio of Family Income at the 75th Percentile to the 25th Percentile, KY and US, 1977-1998



Souce Kentucky Long-Term Policy Research Center Analysis of Current Population Survey data, Sheldon Danziger and Deborah Reed

As both the nation and state began to recover from the economic downturn of the early 1990s, recent years have seen a slight decline in the income ratios from their highest points of 3.5 in 1992 for Kentucky and of 3.1 in 1993 for the United States. However, despite this recent economic growth and its positive effect on income distribution, the overall 20-year trend in these ratios is an increasing one. The 1997 values remain substantially higher than the gap of the late 1970s.

Comparison of the income ratios for Kentucky and the nation reveals another trend: Kentucky's income gap, as defined by the 75-25 ratio, remains greater than the nation's for much of this period. Kentucky's income gap rarely equals or falls below that of the United States during this 20-year period.[195] Not surprisingly,

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[193] National estimates were provided courtesy of Deborah Reed of the Public Policy Institute of California. In order to compare our state estimates to these national results, we adopted the methodology used by Danziger and Reed. See Footnote 188. See Appendix A for more detail on methodology.

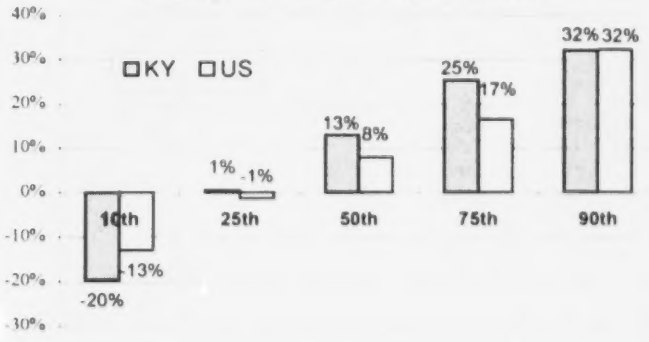
[194] National level data are the actual ratios from each year. To more clearly identify the long-term trend, three-year moving averages of these ratios were used at the state level to smooth out any year-to-year variations resulting primarily from small sample size.

[195] This is a comparison of the three-year moving average of Kentucky ratios to each year's individual ratio for the nation. Looking at the *actual* ratios from each year, Kentucky's ratio falls below the nation's four more times, in 1978, 1981, 1985 and 1995. However, even without controlling for the year-

given the recession of the early 1990s, 1992-1994 saw the greatest differences between these two ratios, as Kentucky's income ratio peaked at a level of 3.5, while the national ratio peaked at 3.1.[196] In addition, the greatest decreases occurred in the years following these peaks, as Kentucky and the nation began to recover from the economic recession of the early 1990s. However, analysis reveals that the declines of the past decade have been insufficient to restore us to pre-1980s levels, and income inequality remains quite high compared with that era.

The changing composition of Kentucky's income distribution highlights the source of the widening gap between the lower and upper middle classes. The 1980s proved to be especially hard on the lower end of the income distribution, as family income declined at the median and below, while incomes at the 75th percentile and above increased (incomes in 1998 dollars, adjusted to represent a family of four). Real income at the 25th percentile dropped 8 percent, from $24,046 in 1979 to $22,105 by 1989. During this same period, real income at the 75th percentile increased 9 percent, from $63,763 to $67,099. Family income increased at both the 25th and 75th percentiles from 1989 to 1997; however, income of the upper middle class grew at a faster rate than lower middle-class income. Income at the 75th percentile grew 19 percent, to $79,522, from 1989 to 1997, while income at the 25th percentile grew only 13 percent, to $25,048. So the substantially higher income disparity between these income groups in the 1990s, as compared with that of the late 1970s, can be attributed to declines in the income of the lower middle class and the inability of its eventual income growth to offset the continual *and* higher income growth of the upper middle class. Figure 13 illustrates this point further, showing a 25 percent increase in family income in Kentucky at the 75th percentile, compared with 1 percent increase for the lower middle class from 1977 to 1997.

FIGURE 13
Percent Change in Real Family Income in Kentucky, 1977-97, and the US, 1973-97



Source: KLTPRC analysis of CPS data, Sheldon Danziger and Deborah Reed

Analysis reveals similar and more pronounced trends

to-year data fluctuations, these data show that Kentucky's income disparity remains greater than that of the nation throughout most of this 20-year period.

[196] Kentucky's relatively greater reliance on manufacturing, combined with the cyclically sensitive nature of the industry, could help explain the disproportionate impact of the recession on Kentucky relative to the rest of the country. Figure 12 shows a dramatic difference between the income ratios of Kentucky and the United States in 1992 and 1993, respectively, before the eventual recoveries of both from the economic shock of the 1990-1991 recession.

in income disparity at the extremes of the distribution. Figure 13 shows income changes in Kentucky at the 10th and 90th percentiles from 1977 to 1997. In contrast to the upper and lower middle classes, real income at the 10th percentile dropped in Kentucky and the United States. However, the drop was greater for Kentucky. At the opposite extreme, Kentucky's 90th percentile income increased by the same rate as for the rest of the country. While higher incomes continued to rise, lower incomes declined and by a faster rate in Kentucky than in the rest of the country.

Sources of Income Inequality

While myriad explanations for the income gap exist, researchers generally attribute its growth to the rising returns to skill and education spurred by technological change and globalization. Others see the deepening divide as a function of a labor market regulatory structure which has allowed declines in the real minimum wage and worker bargaining power.[197] However, given the strong relationship between wages and income, technological change and globalization, which have both driven a wedge between the value of high-skilled and low-skilled labor, are seen as the primary culprits of increasing income disparity.[198]

Technological advances have contributed to the widening gap in several ways. Many low-skill jobs, once abundant, have been eliminated by advances in automation, resulting in a need for higher-skilled workers to attend highly developed equipment. In addition, technologically advanced systems require skilled workers with training in these areas as well as the ability and knowledge to keep pace with the rapid changes that shape the new knowledge-based economy of today's world.

Globalization also contributes to growing income inequality through low-skill job displacement abroad, increased immigration, and global competition. Because U.S. workers are unable to compete with low-wage production workers abroad, many fear losing their jobs to industrial relocations to underdeveloped, low-wage countries, and often conclude that wage concessions are necessary to job security.[199] At the same time, increased immigration boosts the supply of low-skilled workers, exerting downward pressure on their wages.[200] Global competition in the production of goods and services places pressure on industries to produce better, more advanced products, requiring skilled workers. These economic forces help increase the size of the economic pie and will likely endure, despite the consequences of an inequitable distribution of increasing wealth.

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[197] David Howell, "Skills and the Wage Collapse," *American Prospect* June 19-July 3, 2000: 74-77; Louis Uchitelle, "Making Sense of a Stubborn Education Gap," *The New York Times* 23 July 2000: 4-3.

[198] According to some estimates, wages constitute about three quarters of family income and male earnings are the largest single component of family income.

[199] Bernstein, McNichol, Mishel, and Zahradnik 34-35.

[200] Recently, this argument has been undermined, as job growth continues in this unprecedented economic expansion. Finding workers to fill many of the low-skill jobs in Kentucky has been difficult, as employers find themselves competing for workers. In this period of growth, employers are welcoming the increased pool of workers to fill these jobs.

Other factors contributing to income inequality include structural changes in the labor market and in family composition. These factors include reduced unionization, a declining real minimum wage, an increase of women in the workforce and as heads of households, and a trend toward smaller households. Persistence of these social trends also seems likely.

Possible Causes of Kentucky's Pronounced Income Divide

A case can be made that as the value of high-skill workers increases relative to low-skill ones, regions with a lower supply of educated, high-skill workers experience deeper income divides. That is, the increased demand for high-skill workers, combined with a relative low supply, drives their wages up even further. Kentucky may be a case in point. Our state lags behind the rest of the country in educational status and in postsecondary enrollment and graduation rates. In the United States, high school graduates enrolled in private or public institutions of higher education within a year of graduation exceeded Kentucky's enrollment by 18 percent in 1996. Furthermore, a 1999 study showed that only 36.7 percent of first-time, full-time baccalaureate students who enroll in Kentucky's four-year colleges each year finish their education within *six* years. Another study found a 42.9 percent graduation rate of students in public institutions within *five* years, nationally.[201]

Since wages are the major component of income, a comparison of relative wages between high school and college graduates further illustrates the effect education and skill have on income inequality. A recent report showed that weekly earnings for college-educated men in Kentucky exceeded those for high school graduates by about 40 percent in the late 1960s and increased to around 60 percent by the mid-1990s.[202] The report showed a similar trend in weekly earnings for females in Kentucky, as the earnings premiums for completing a bachelor's degree or graduate program have grown over this same period. So, not only have enrollment and graduation rates remained considerably below national averages, the returns to education have been increasing for Kentuckians as well.

On the flip side, a relatively higher supply of and declining labor market opportunities for low-skill workers deepens the divide. Kentuckians with only a high school education are relatively abundant compared to national figures and this helps depress their wages further. Shifting employment trends highlight the declining opportunities for these workers. A recent report found that "changes in occupational mix in Kentucky suggest that the Kentucky economy has been slowly replacing low human capital jobs with high human capital jobs, and that this replacement has been occurring more rapidly in Kentucky than the nation."[203]

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[201] Kentucky Long-Term Policy Research Center (KLTPRC), *Visioning Kentucky's Future: Measures and Milestones 2000* (Frankfort: Author, 2000) 26.

[202] Mark C. Berger, "Education and Earnings in Kentucky, 1964-1996," *1998 Kentucky Annual Economic Report* (Lexington: University of Kentucky Center for Business and Economic Research, 1998) 19-24.

[203] University of Kentucky Gatton College of Business and Economics Center for Business and Economic Research, *Long-Term Trends in the Kentucky Economy* (Lexington: Author, 1999) 40.

Other labor market trends contributing to the growing income gap include a declining minimum wage and decreased unionization. By some estimates, approximately one third of the increase in the earnings gap over the past 20 years can be attributed to "the deterioration of unions and the minimum wage ..."[204] In 1997, the real value of the minimum wage was 18 percent less than in 1979. The legislated increases in the 1990s were not enough to compensate for the 31 percent drop that spanned the decade of the 1980s.[205] Some argue that differing skill levels are not compensated any more or less than they were in the past, but rather that worker bargaining power is slipping in the face of increasingly global and deregulated markets.[206] Historically, unions have helped shrink the wage gap by increasing competition among employers to raise wages and benefits. Unionization rates in the United States declined from 20 percent in 1983 to 14 percent in 1997, while union membership in Kentucky declined from 17 percent to 10 percent during the same period.[207]

Other possible reasons for Kentucky's greater income gap relative to the rest of the country include the changing face of its labor force and its trend toward smaller households. From 1989 to 1996, the labor force participation rate of women increased 3.5 percent in Kentucky, while the nation saw an increase of only 1.5 percent. In addition, the labor force participation of Kentucky men fell 3.8 percent, while the U.S. labor force participation of men fell only 2.5 percent from 1989 to 1996. Women have traditionally been concentrated in lower paying jobs in the service and retail trade sectors, further deepening the income divide in Kentucky as compared with the United States.[208]

The changing dynamics of family income structure exaggerate this divide. A family with two wage earners who divorce, for example, could split a $60,000 household into two $30,000 households or, more likely, one $45,000 household and one $15,000 household, in either case, lowering the summary measures of income for Kentucky as a whole. Indicative of this trend toward smaller, single-headed and single-person households is an increase in population in Kentucky of only 8 percent, while households increased by 18 percent between 1980 and 1998.[209] During this same period, the U.S. population increased by 20 percent while U.S. households increased by 25 percent.

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[204] Uchitelle, "Making Sense ...."

[205] Bernstein, McNichol, Mishel, and Zahradnik 35.

[206] Bernstein, McNichol, Mishel, and Zahradnik 33, 35; Howell 74-77.

[207] Union participation rates were estimated by the Kentucky Long-Term Policy Research Center using data from the March Supplement to the Current Population Survey as compiled by Unicon Research Corporation. Union membership increased slightly in Kentucky to 12 percent in 1999.

[208] While the relatively larger increase in female labor force participation depresses wages for Kentucky, the decrease in male labor force participation places upward pressure on male wages relative to the rest of the country. More in-depth analysis is required to identify the magnitudes of these changes and their overall effect on income inequality.

[209] Population and household estimates for Kentucky and the United States are from the U.S. Bureau of the Census. These data are included for illustrative purposes only and are not directly comparable to the data used in previous analyses, which were based on a sample of Kentucky's population. However, this lack of comparability does not nullify the argument that the structure of families and households has been changing and has affected income inequality.

Conclusion

Although Kentucky's income gap has increased over the past 20 years and continues to do so, several policy options exist to slow its growth. Data reveal that Kentucky has been hit harder by global and technological trends than the rest of the nation. The consequences of poor public health and a breakdown of the social fabric are associated with a deepening divide. Fortunately, Kentucky has already begun to take steps toward mitigating the effects of large income disparities in the form of broad-based educational policies. However, the effects of these reforms are long-term in nature, requiring patience and commitment to their continuation.

The Digital Divide

Cyberspace is the land of knowledge, and the exploration of that land can be a civilization's truest, highest calling. The opportunity is now before us to empower every person to pursue that calling in his or her own way.

—Esther Dyson, George Gilder, George Keyworth and Alvin Toffler, 1994
Cyberspace and the American Dream: A Magna Carta for the Knowledge Age

The persistent gap in incomes has given rise to other gaps that will almost certainly undermine economic growth. Not surprisingly, access to computers and the Internet, the very tools that promise to be "the greatest equalizers our society has ever known,"[210] skews along the lines of income and education. In short, those who arguably would most benefit from connection to the Internet are still the least likely to have access to it.

Nationally, according to Forrester Research Inc., most of the gains in online penetration have occurred among solidly middle-class households with earnings between $50,000 and $74,999. Between 1999 and 2000, online access in this relatively affluent group leapt from 47 percent to 62 percent,[211] as computer prices continued to plummet and retailers offered substantial discounts in exchange for extended Internet contracts. But the cost of a computer remains out of reach for many. Among households with incomes of $15,000 or less—the economic circumstances that characterize a substantial number of Kentucky households—online access gained only two percentage points nationally. Only 11 percent of these households had access to the Internet in 2000.[212]

The growing digital divide not only excludes many from ready access to education, work and entrepreneurial opportunities, low-cost global communications, competitively priced products and services, and a vast wealth of empowering information, it effectively excludes them from the social and economic mainstream of the nation and, increasingly, the world. Individuals who simply do not know what dot.com or search engine means, for example, do not understand the meaning of a significant portion of commercials now on television—the great equalizer of the 1950s!

The growth of "e-tailing" eventually may create yet another inequality. This year alone, the federal General Accounting Office estimates that states and localities will lose between $300 million and $3.8 billion in tax revenue to so-called e-commerce.[213] If, as anticipated, Internet sales reach as much as $144 billion by

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[210] Quote attributed to President Clinton by Bob Davis in "The Internet in Schools: a Crusade Backed by Scant Data or Results," *Wall Street Journal* 19 June 2000.
[211] Roger O. Crockett, "How to Bridge America's Digital Divide," *Business Week* 8 May 2000: 56.
[212] Crockett.
[213] "Study Finds Internet Costs State, Local Governments a Lot in Taxes," *New York Times on the Web* 25 July 2000, 25 July 2000 <http://www.nytimes.com/library/tech/00/07/biztech/articles/25net-tax.html>.

2003,[214] revenue losses and tax fairness may take on a whole new meaning. National analyses as well as our own analysis of the state impact show that online shoppers are principally more educated and affluent. We find, for example, that among those Kentuckians who have made online purchases, only 4.8 percent have incomes under $20,000 a year. By contrast, one third of online shoppers in the Commonwealth reported annual incomes over $50,000.[215] Today's veritable exemption of electronic sales from taxation has what *Business Week* calls "stark" implications: "Net shopping benefits mostly well-off people and makes the already-regressive structure of sales taxes even more unbalanced."[216] If states opt to raise sales taxes to make up for revenue lost to online sales, an even larger share of the tax burden could fall on those who are least likely to enjoy the essentially tax-free turf of the Net.

With each passing hour of Net time, the threads of information technology are being woven tighter and more elaborately into the fabric of life for most Americans. The Internet has become the first option for a growing number of Americans for news, weather, and sports; product research and consumer purchases (new and used); job searches; highway directions to virtually anywhere; college credits; buying, selling, and estimating the value of stocks; health information or prescriptions; and routine communications with friends, colleagues, businesses, and government. Clearly, information technology has the potential to change the economy, health care, education, social interaction, and the basic framework of governance in fundamental ways. Indeed, a recent article in *State Legislatures* cautions that the Internet could usher in an era of direct citizen involvement that challenges the very core of representative democracy.[217] Thus, inattention to the inaccessibility of this increasingly important tool could jeopardize the future capacity of whole communities to participate in the social and economic mainstream. The long-term costs could be incalculable.

The Importance of Access to and Use of Information Technology

Research shows that because information technology permeates so many aspects of our lives, access to and use of it appear to be increasingly important for anyone becoming politically informed, socially integrated, and economically successful in the Information Age. In the Center's 1998 trends report, *The Leadership Challenge Ahead*, we discussed the ways in which individuals who use computers are better informed about political, community, and social issues than those who do not use computer-based communications.[218] Research has also shown that the emergence of electronic networks, such as the Internet, facili-

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[214] Andy Reinhardt, "No Net Taxes: a Break for the Well-Off," *Business Week* 17 January 2000: 39.

[215] Michael T. Childress, Robert W. Cox, Merl M. Hackbart, Charles W. Martie, Kevin O'Neil and Peter Schirmer, *Collecting Taxes in the Cyberage* (Frankfort: Kentucky Long-Term Policy Research Center, 1999) 13.

[216] Reinhardt 39.

[217] Brian Weberg, "Instant Democracy for Everyone," *State Legislatures* (National Conference of State Legislatures) July/August 2000: 20-5.

[218] Robert H. Anderson, Tora K. Bikson, Sally Ann Law, and Bridger M. Mitchell, *Universal Access to E-Mail: Feasibility and Societal Implications* (Santa Monica: RAND, 1995) 14.

tates the crumbling of "status-based social structures" and thus benefits the politically or economically disadvantaged.[219] Moreover, ample evidence suggests that access to computers and information networks has broad economic benefits for workers. Our estimates indicate that workers in businesses who use computers earn 10 to 20 percent more than workers in comparable businesses who do not.[220]

Clearly, access to and use of information technology are vitally important. Indeed, RAND researchers suggest, "... there [are] reasons to view economic and social stratification of computer and network use differently from the socioeconomic stratification that characterizes the consumption of other goods and services."[221] Because those who use the technology are, by definition, better informed, "different levels of access to computer-based communication technology, then, may further stratify individuals and create information have-nots alongside the information elite."[222] And this stratification is likely to become more problematic as public and private institutions increasingly disseminate information electronically.

Levels of Access and Use

Kentuckians are becoming increasingly interconnected in the wired community, but still lag behind the U.S. average. We present data in this section to illustrate the levels of access to and use of information technologies in Kentucky. We compare Kentucky to neighboring states and to the United States by examining trends over several years.

Data. The data are from two sources, the Current Population Survey (CPS), which is conducted by the U.S. Bureau of the Census, and the Kentucky Survey, which is conducted by the University of Kentucky Survey Research Center (UKSRC).[223] The CPS data is comprised of survey responses from noninstitutionalized civilians in the United States living in households, whereas the UKSRC data is comprised of responses from noninstitutionalized persons (civilian or military) living in Kentucky households. Both adults and children are included in

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[219] Anderson, Bikson, Law, and Mitchell 17.

[220] Michael T. Childress, Michal Smith-Mello, and Peter Schirmer, *Entrepreneurs and Small Business—Kentucky's Neglected Natural Resource* (Frankfort: Kentucky Long-Term Policy Research Center, 1998) 62.

[221] Anderson, Bikson, Law, and Mitchell 15.

[222] Anderson, Bikson, Law, and Mitchell.

[223] The 1996 University of Kentucky Survey Research Center (UKSRC) survey was conducted from May 5 until June 5, 1995. Households were selected using random-digit dialings, a procedure giving every residential telephone line in Kentucky an equal probability of being called. The sample includes 629 noninstitutionalized Kentuckians 18 years of age or older. The margin of error is slightly less than 4 percentage points at the 95 percent confidence level. Calls for the 1998 survey were conducted from May 11 until June 10, 1998. The sample includes 658 noninstitutionalized Kentuckians 18 years of age or older. The margin of error is approximately ± 3.8 percentage points at the 95 percent confidence level. Calls for the 2000 survey were conducted from May 18 until June 26, 2000. The sample includes 1,070 noninstitutionalized Kentuckians 18 years of age or older. The margin of error is approximately ± 3 percentage points at the 95 percent confidence level.

the CPS data,[224] but only individuals 18 and older are included in the UKSRC data. Our analysis and presentation of results are at the individual level.[225]

Outcome variables. Periodically since 1984, the CPS has included the question: *Is there a computer in this household?* At the individual level of analysis, "computer access" is the percentage of individuals with household access. We assume that everyone in the household has access to the computer.[226] The computer access data from UKSRC are based on two questions: *Do you have a personal computer in your home?* and *Do you have access to a personal computer at work, school, or elsewhere?* The second question is asked only if the respondent answers "no" to the first question.

We are also interested in use of "network services,"[227] such as the Internet. This variable is designed to show whether an individual has used a computer at home, work, school, or some other place to access the Internet, connect to a bulletin board, or send electronic mail. It is derived from any one of several CPS questions dating back to 1984 pertaining to "network services." The UKSRC data are obtained from a single question: *Have you accessed the Internet or Worldwide Web in the last year?*

Results. While Kentucky is below the U.S. average, it is still competitive with neighboring states with respect to the percentage of households with home computer access (see Figure 14) and utilization of network services (Figure 15).[228] An estimated 46 percent of Kentucky households had access to a home computer in 2000, compared with the U.S. average of 51 percent.[229] And approximately 37 percent of Kentucky households utilized network services in 2000, somewhat lower than the U.S. estimate of about 42 percent.[230]

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[224] In 1993 and 1998 the CPS data are collected on computer access if the person is at least 3 years old. However, these data are collected from individuals 15 years old and older in the 1984, 1989, 1994, and 1997 surveys.

[225] CPS data can be analyzed at the individual or household level. We used the individual weights that approximately equal the inverse of the probability of being in the sample. The UKSRC data are strictly individual-level data and weights are not used to correct for interview response rates.

[226] Our method was inspired by and adopted from a recent RAND report. See Tora K. Bikson and Constantijn W.A. Panis, *Citizens, Computers, and Connectivity: A Review of Trends* (Santa Monica: RAND, 1999).

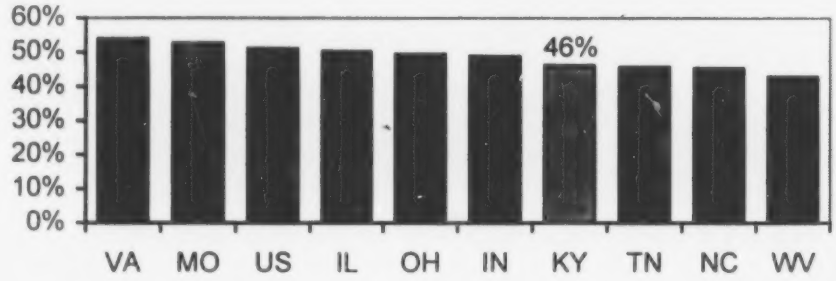
[227] Bikson and Panis 5.

[228] These data are from National Telecommunications and Information Administration, *Falling Through the Net: Toward Digital Inclusion* (Washington: author, 2000). The report is available on the Internet at <http://www.ntia.doc.gov/ntiahome/fttn00/contents00.html>.

[229] The 90 percent confidence interval for Kentucky is 43.4 percent to 49.0 percent.

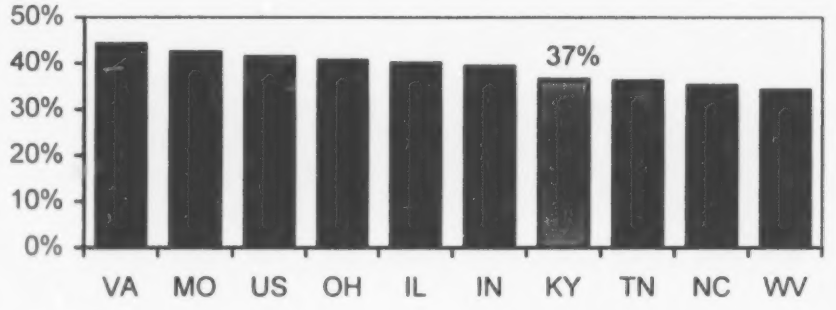
[230] The 90 percent confidence interval for Kentucky is 33.9 percent to 39.3 percent.

FIGURE 14
Estimated Percent of Households with Home Computer Access in 2000, Selected States



Source: U.S. Department of Commerce, Economics and Statistics Administration, National Telecommunications and Information Administration

FIGURE 15
Estimated Percent of Households Using Network Services in 2000, Selected States



Source: U.S. Department of Commerce, Economics and Statistics Administration, National Telecommunications and Information Administration

While Kentucky trails the U.S. average and lags behind most neighboring states at the household level, individual-level data show that Kentucky has gained considerable ground on the U.S. average since the mid-1980s. One way to measure the difference between the United States as a whole and Kentucky is the ratio between their respective percentages. A higher ratio indicates a larger gap.

FIGURE 16
Estimated Percentage of Individuals with Home Computer Access and Ratio of the US to Kentucky, Selected Years

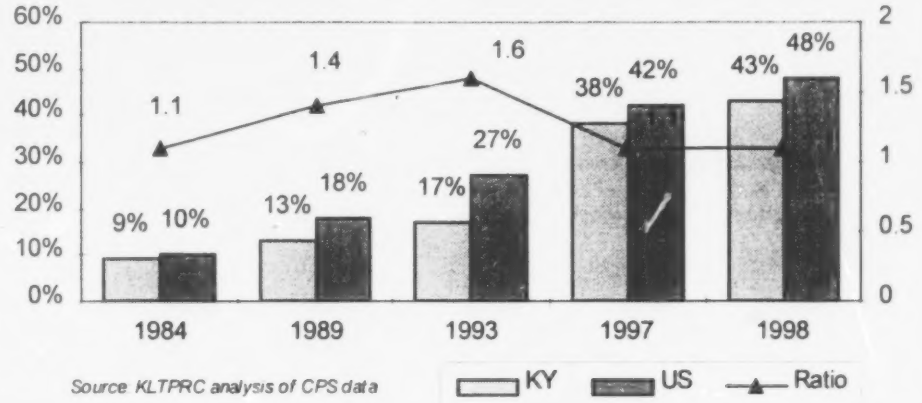
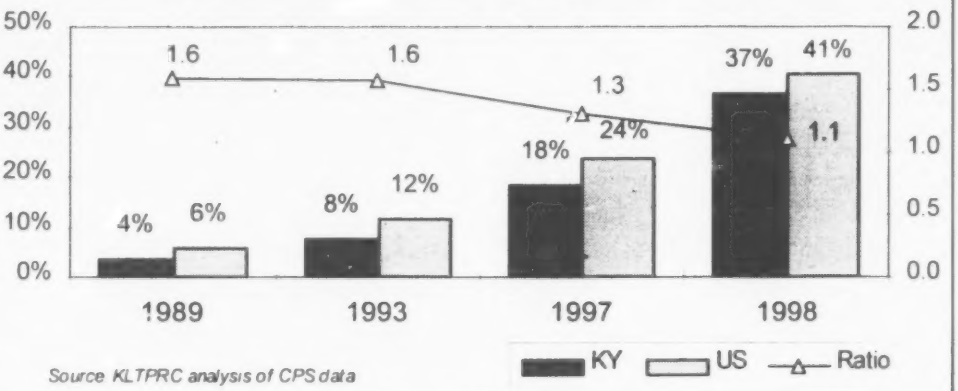


Figure 16 shows the estimated percentage of individuals with home computer access and the ratio between the U.S. average and the Kentucky average. This ratio increased steadily from 1.1 in 1984 to 1.6 in 1993, indicating a widening of the gap between Kentucky and the United States. However, the ratio then decreased to 1.1 in 1997 and 1998, suggesting that Kentucky has significantly narrowed the gap in computer access.

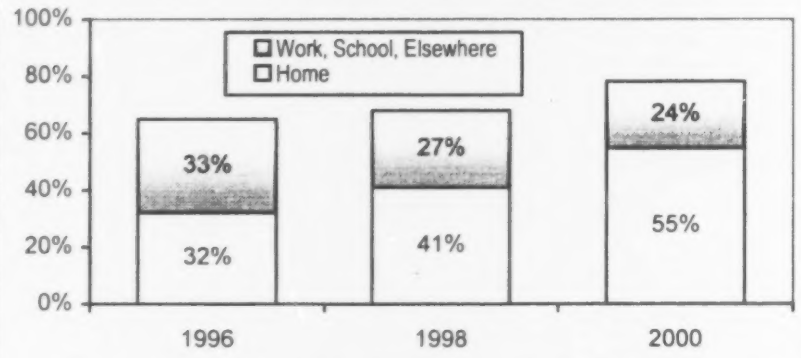
FIGURE 17
Estimated Percentage of Individuals with Network Access and Ratio of US to Kentucky for Selected Years



Likewise, Figure 17 illustrates how the percentage of Kentuckians using network services has also been catching up to the U.S. average. The ratio has dropped from 1.6 during the late-1980s and early-1990s to 1.1 in 1998. And data from three statewide surveys conducted for the Kentucky Long-Term Policy Research Center by the University of Kentucky Survey Research Center further underscore that, like most U.S. households, citizens of the Commonwealth are moving rapidly into the Information Age.

More than ever before, Kentuckians are embracing the technology of the Information Age. Indeed, a *majority* of Kentucky adults now have access to a computer in their homes. In 1996, 32 percent of surveyed adults in Kentucky said they had a personal computer in their homes, and another 33 percent did not have a computer at home but had access to one at work, school, or elsewhere (see Figure 18). Thus, a total of 65 percent of adults in Kentucky had access to a personal computer somewhere. In a survey completed in the spring of 1998, we found that the share of adults with a computer at home had risen from 32 percent to 41 percent. However, the share of adults with access to a computer somewhere had barely changed, from 65 percent to 68 percent. In the most recent survey, which was completed in the spring of 2000, a majority (55 percent) of Kentucky adults have access to a computer at home while another 24 percent have access at work, school, or elsewhere, raising the overall percentage to nearly 80 percent.

FIGURE 18
Percent of Kentucky Adults with Access to a Computer at Home, Work, School, or Elsewhere



Source Kentucky Long-Term Policy Research Center and UK Survey Research Center

Internet use in Kentucky also has increased significantly over the past four years. In 1996, we found that about 26 percent of adults in Kentucky had used the Internet. In 1998, rates of Internet access had increased to 42 percent. And in 2000 we find that an estimated 63 percent of surveyed Kentucky adults have accessed the Internet in the past year (see Figure 19). Five years ago, we found that younger people and more educated people were the most likely to have used the Internet. While that remains true today, Internet use has soared at all age and education levels. Moreover, regional disparities in Internet use are beginning to narrow (see Figure 20).[231] For example, in 1998 eastern Kentucky trailed the other regions by a large margin, but now a majority of surveyed adults in eastern Kentucky have accessed the Internet, and its percentage is closer to those of other regions.

[231] The 95 percent confidence intervals for the four regions in Figure 20 are: West 54.5-69.3; South Central 47.1-61.5; Urban Triangle 67.6-75.6; and East 46.5-60.1. Consequently, there is not a statistically significant difference between West, South Central, and East or between West and Urban Triangle.

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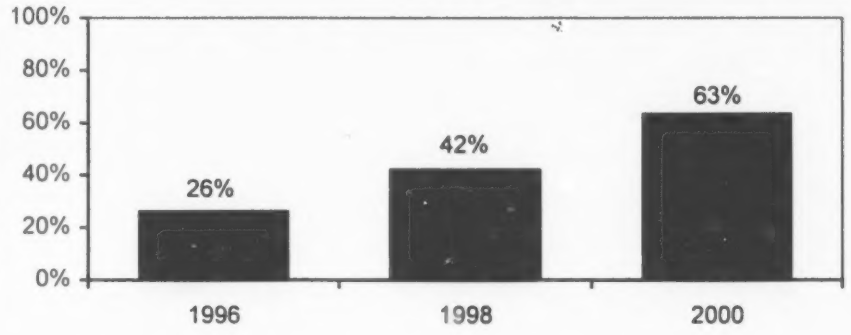
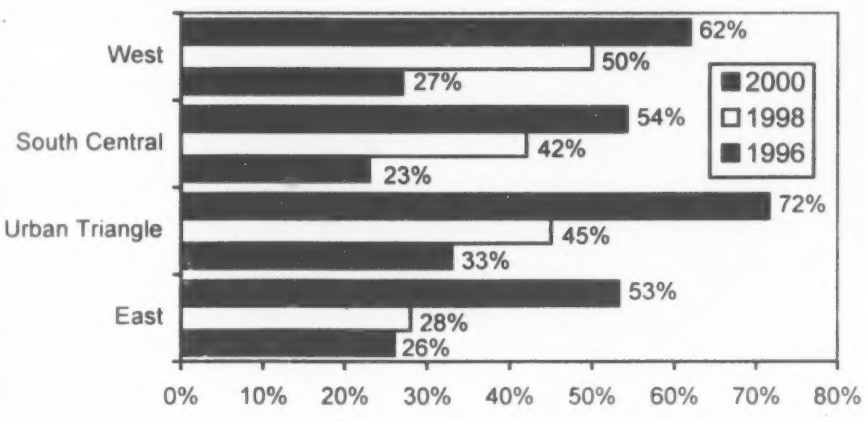
FIGURE 19
Estimated Percentage of Kentucky Adults Who Have Accessed the Internet, 1996, 1998 and 2000



Source Kentucky Long-Term Policy Research Center and UK Survey Research Center

FIGURE 20
Percentage of Adults in Kentucky Who Have Accessed the Internet, by Region



Source Kentucky Long-Term Policy Research Center and UK Survey Research Center

Despite the increasing percentages of Kentuckians who have access to a computer or utilize network services, considerable gaps remain across important socioeconomic and demographic groups. In the next section, we explore the digital divide.

Contours of the Divide

> *The digital divide is about more than owning cell phones or pagers; it's about learning a new vocabulary—like dot-coms..., E-commerce [electronic business], distance learning [taking classes over the Internet] and broadband [high-speed Internet access]. Those who don't understand these concepts or have no stake in their development will be digital have-nots, with limited access to knowledge and economic leverage. If people of color get stuck on the wrong side of the digital divide, our communities risk being cut off from key information. They won't, for example, use the World Wide Web to shop for the lowest interest rate on a home mortgage, pursue college scholarships or supplement a critical job search by way of Web channels.*
>
> William E. Kennard, FCC Chairman

The schism between the information "haves" and "have nots" is a topic of great discussion among policymakers. In fact, at the conclusion of the G8 Summit this year, the leaders of the world's seven largest economic powers plus Russia agreed to study the digital divide between the developed and developing countries and explore ways to bridge the gap.[232] In the United States, a number of conferences have focused on the digital divide. These include, but are not limited to, the White House conference on the New Economy, the United States Conference of Mayors and the Economic Development Administration's conference on e-commerce and the digital divide, and the Southern Growth Policy Board's conference, "1 South, Digitally Divided." To be certain, the digital divide is real and has attracted considerable attention.

According to a National Telecommunications and Information Administration (NTIA) report published in July 1999, there is a:

> *...digital divide between the information rich (such as Whites, Asians/Pacific Islanders, those with higher incomes, those with more educated and dual-parent households) and the information poor (such as those who are younger, those with lower incomes and education levels, certain minorities, and those in rural areas or central cities).*[233]

A digital divide also exists in Kentucky, and in the section below we explore its contours.

Method and Data. We analyzed CPS data to determine whether a digital divide exists in Kentucky across socioeconomic and demographic lines. We are specifically interested in the predictor variables of household income, educational attainment, location of residence (metropolitan or not), gender, age, and race. Simple cross-tabulations or "gross" differences between technology use and the predictor variables can suggest the existence of a divide. However, the problem with "gross" differences is that many of the predictor variables highly correlate

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[232] Martyn Williams, "G8 Leaders Fail on Digital Divide," *CNN.com* 26 July 2000, 26 July 2000 <http://www.cnn.com/2000/TECH/computing/07/25/g8.divide.idg/index.html>.

[233] National Telecommunications and Information Administration, *Falling Through the Net: Defining the Digital Divide* (Washington: U.S. Department of Commerce, July 1999), 14 March 2000 <http://www.ntia.doc/gov/ntiahome/fttn99/FTTN.pdf>.

with each other. Consequently, if we see a digital divide across education lines we cannot determine how much is due to education, income (since lower education is associated with lower incomes), or location of residence (since individuals in urban areas tend to have slightly higher levels of income and educational attainment).

Consequently, we also used a multivariate statistical model (probit) to estimate the effect that the socioeconomic and demographic characteristics have on the probability of access to a computer at home or utilizing network services. This kind of analysis allows us to estimate the independent relationship, for example, between race and technology use while holding other important factors constant, like education, income, gender, age, and location of residence.[234] The estimated differences using this technique are referred to as "net" differences.

Results. Table 4 shows the estimated "gross" and "net" differences for Kentucky in 1998.[235] These results reveal a stark digital divide in Kentucky on the basis of income, education, race, and age. For example, an examination of the net differences shows that Kentuckians in the highest income quartile are *2.7 times more likely* to have home computer access than those in the lowest income quartile and *2.9 times more likely* to use network services. The importance of education is illustrated by the estimate that individuals with a bachelor's degree are 1.4 times more likely to have home computer access than those with a high school diploma or GED, and are 2.1 times more likely to use network services. Race also exerts an influence over who accesses and uses information technology in Kentucky. Non-Hispanic whites are 1.8 times more likely to have home computer access than non-Hispanic blacks, and are 1.5 times more likely to use network services. Finally, the youngest Kentuckians are much more likely to use these technologies.

[234] Detailed information on the model specification and parameter estimates can be found in Appendix B.

[235] This method and terminology is used by Bikson and Panis.

TABLE 4
Estimated Gross and Net Percentages of Kentuckians Who Have Access to a Home Computer and Use Network Services, 1998

	Home Computer		Network	
	Gross	Net	Gross	Net
Household Income				
Bottom quartile	16	26	14	19
Second quartile	27	27	30	34
Third quartile	66	65	49	51
Top quartile	77	71	64	55
Education				
HS diploma or GED	36	44	26	31
Bachelor's degree	66	63	63	64
Residence				
Non-Metro	37	40	35	37
Metro	51	49	39	37
Gender				
Female	42	44	35	36
Male	44	43	39	38
Age category				
3 to 19	53	66	48	68
20 to 39	47	41	43	35
40 to 59	44	39	35	27
60 and over	16	19	11	11
Race				
White (non-Hispanic)	44	45	38	38
Black (non-Hispanic)	22	25	23	25

Note See Appendix B for the 95 percent confidence intervals

The bad news for Kentucky is that we reflect the country as a whole in the sense that the "information haves" tend to be younger, better educated, wealthier, and white, while the "information have-nots" tend to be black, older, and have less education and income. The good news for Kentucky is that the digital divide narrowed considerably from 1993 to 1998.

We present in Table 5 the estimated "net" percentages of Kentuckians who had access to a home computer and used network services in 1993 and 1998. The percentages show a significant narrowing of the digital divide over this time period for nearly all socioeconomic and demographic categories. For example, the gap between the highest and lowest income groups narrowed from the wealthiest Kentuckians being eight times more likely in 1993 to have access to a home computer to about three times more likely in 1998. We see this kind of reduction in the digital divide across education, age, and geographic lines, but *not* across race lines. In fact, the gap actually widened between blacks and whites with respect to

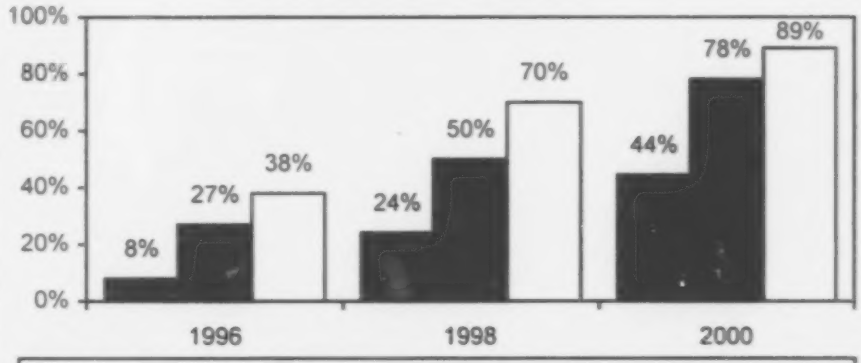
network use. In 1993 whites were about as likely as blacks to use network services. However, by 1998 whites were *1.5 times more likely* than blacks to use network services.

TABLE 5
Estimated Net Percentages of Kentuckians Who Have Access to a Home Computer and Use Network Services, 1993 and 1998

	Home Computer (Net Percentages)		Network (Net Percentages)	
	1993	1998	1993	1998
Household Income				
Bottom quartile	4	26	0.1	19
Second quartile	13	27	3	34
Third quartile	14	65	3	51
Top quartile	31	71	7	55
Education				
HS diploma or GED	13	44	2	31
Bachelor's degree	24	63	6	64
Residence				
Non-Metro	10	40	1.2	37
Metro	16	49	2.2	37
Gender				
Female	12	44	1.6	36
Male	13	43	1.5	38
Age category				
3 to 19	27	66	1	68
20 to 39	10	41	5	35
40 to 59	11	39	5	27
60 and over	4	19	0.1	11
Race				
White (non-Hispanic)	14	45	1.9	38
Black (non-Hispanic)	7	25	2	25

So, we are witnessing two major trends with respect to Kentuckians' use of information technology. First, there are large differences in technology access and utilization between social, economic, and demographic groups. Second, these differences have been getting smaller. Perhaps the best illustration of these two trends is shown in Figure 21, which illustrates Internet use among Kentucky adults by education level. In 1996 Kentuckians with a bachelor's degree or more were 4.8 times more likely to access the Internet than those with a high school education or less. The gap has persisted, but it narrowed to a ratio of 2.9 in 1998 and to 2.0 in 2000.

FIGURE 21
Internet Use by Kentucky Adults, by Education Level



Source: Kentucky Long-Term Policy Research Center and UK Survey Research Center

These findings make a subtle yet powerful point: the people who are most vulnerable in today's economy—the least educated—are far less inclined to own personal computers or use the Internet, which would enable them to acquire some of the skills demanded in higher-paying jobs. With the demand for high-skill workers rising rapidly, experts emphasize the importance of lifelong learning and continuous skill upgrading. Many workers will change jobs in the coming years, either by choice or by necessity. Those people with low incomes and low education levels will experience difficulties moving up the income ladder if they do not acquire some high-technology skills. Another troubling finding is the persistently wide gap between whites and blacks.

Conclusion

A persistent digital divide in the Commonwealth could forestall the promise of today's buoyant economy. Today, computer literacy has become a core skill, one that those without ready access to a computer cannot easily gain. Broader access to computers will also help foster the higher skills that today's dominant employers are seeking, the entrepreneurial talents needed to capture more New Economy opportunities for ourselves, and the levels of comfort and savvy that are needed to open wide the doors to electronic learning.

The Opportunity Gap

Many of us are from families that gradually built an enviable quality of life through hard work, savings, and planning. Our fathers, and occasionally our mothers, held relatively uncomplicated but reliable jobs. Gradually, they saved for a house and the things they wanted to fill it. But the rules of today's economy are far different. Just as we reported two years ago, admission to the middle class has become virtually conditional on educational status. Though Harvard dropout Bill Gates serves as the nation's most notable exception, academic credentials count as never before. Without some postsecondary education or training, a lifetime of low earnings is the most likely outcome for individuals and their families.

Consequently, improving the educational status of our population has become a central goal for the Commonwealth, the only tried and true path to reducing poverty, increasing personal income and our standard of living. To do so, however, it will be necessary to continue showing more and more poor and low-income children, their parents, and other working-age adults, just how much education pays. Otherwise, postsecondary education will remain a predominantly middle-class pursuit while the poor, who stand to benefit the most from its proven returns, remain the least likely to pursue it.

Kentucky has recognized the need to close the opportunity gap. In recent years, policymakers have committed new dollars to higher education financial aid programs that can benefit all students. For example, the maximum award for Kentucky's merit-based scholarship program, the Kentucky Educational Excellence Scholarship (KEES), increased from $500 to $1,000. This resulted in a 250 percent increase in its budget for 2000-2001, from $6.3 million to $22.3 million.[236] The Kentucky General Assembly also increased funding for the state's two main need-based financial aid programs, leading to a 16 percent increase in funding to $48.3 million in 2000-2001.[237] These increases put Kentucky well above average with respect to financial aid funding, but Kentucky falls short when compared with the states offering the highest levels of state financial aid. Table 6 shows that state spending per student in Georgia is equal to almost 30 percent of the average tuition and fees for its four-year public institutions. In Kentucky it equals 8.5 percent (the median for all states is 4.9 percent). However, Kentucky's position could be enhanced dramatically over the next five years. Starting in the 1998-2000 biennium, legislation (SB21) mandates that an increasing share of lottery receipts be allocated for student financial aid. By state fiscal year 2005, the Commonwealth will provide approximately $150 million for merit scholarships or student financial aid.

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[236] *The Chronicle of Higher Education Almanac* 1 Sept. 2000: 79.
[237] *The Chronicle of Higher Education Almanac*.

TABLE 6
Ranking of Selected States: State Spending on Student Aid (per student) as a Percentage of Average Tuition

Rank	State	Total Enrollment, Fall 1997[a]	Average Tuition & Fees, 1998-99 (Public 4-Year)	State Spending on Student Aid, 1998-99 (000)	State Spending "per student"[b]	Spending as % of average tuition[c]
1	GA	306,238	$2,442	$221,350	$723	29.6%
2	NC	373,717	$1,958	$118,670	$318	16.2%
6	IL	726,199	$3,845	$338,128	$466	12.1%
10	IN	295,517	$3,490	$100,824	$341	9.8%
13	**KY**	**178,924**	**$2,516**	**$38,441**	**$215**	**8.5%**
17	VA	364,904	$4,160	$110,243	$302	7.3%
21	WV	87,965	$2,337	$13,103	$149	6.4%
22	OH	537,169	$4,258	$144,942	$270	6.3%
31	TN	249,805	$2,495	$21,631	$87	3.5%
32	MO	302,896	$3,550	$35,178	$116	3.3%
50	SD	39,042	$3,038	$0	$0	0.0%
	US[d]	179,946	$2,864	$29,361	$168	4.9%

Note: These data are obtained and derived from *The Chronicle of Higher Education Almanac*, 1 Sept. 2000: 12-3. [a]Includes public and private, 4- and 2-year institutions. [b]State spending on student aid divided by total enrollment. [c]State spending per student as a percentage of average tuition and fees. [d]Median of the 50 states.

A copious amount of research has shown that the "playing field" tilts in favor of upper income families and students concerning financial aid and college attendance.[238] Indeed, the findings of a fall 1999 national survey of 260,000 entering freshmen, "The American Freshman: National Norms for Fall 1999,"[239] illustrate the relationship of family income to college entrance (see Table 7). Though about one quarter (25.5 percent) of U.S. families had incomes at or below $25,000 in 1997, the survey found that only a sixth (15.7 percent) of 1999 entering freshmen estimated their families' incomes in this range. In contrast, nearly one third (32.3 percent) of entering freshman reported annual parental incomes over $75,000 though only 22.8 percent of U.S. families fell within this income category.[240]

[238] See for example Robert Zemsky (editor), "A Very Public Agenda," *Policy Perspectives*, Institute for Research on Higher Education, University of Pennsylvania, Sept. 1998: 4.

[239] Linda J. Sax, Alexander W. Astin, William S. Korn, and Kathryn M. Mahoney, *The American Freshman: National Norms for Fall 1999* (Los Angeles: Higher Education Research Institute, UCLA, 2000).

[240] Income data are from Table No. 749 in U.S. Census Bureau, *Statistical Abstract of the United States: 1999* (Washington: U.S. Department of Commerce, 1999) 478.

TABLE 7 Distribution of 1999 Entering Freshmen by Estimated Annual Parental Income and 1997 US Families by Annual Income		
	Estimated Parental Income of Entering Freshman, 1999	**Distribution of U.S. Families by Income, 1997**
Below $25,000	15.7%	25.5%
$25,000-49,999	25.9%	30.2%
$50,000-74,999	26.3%	21.3%
$75,000 and over	32.3%	22.8%
Source: American Council on Education, University of California, and U.S. Bureau of the Census		

Economist Thomas Kane has found that from 1977 to 1993 about 70 percent of 18- and 19-year-olds from families in the upper income quartile pursued post-secondary education.[241] By comparison, just over 50 percent from the second quartile, about 50 percent from the third quartile, and less than 30 percent from the bottom quartile attended postsecondary education.[242] Moreover, since 1993 the percentage has been increasing among students in the upper quartile and decreasing among those in the bottom quartile.[243]

To determine the extent of the education divide in Kentucky, we used Current Population Survey data to explore the relationship between income and school attendance in Kentucky.[244] We constructed a dichotomous variable to signify whether an individual was attending *regular* school (i.e., high school or college) or otherwise taking any business, vocational, technical, secretarial, trade, or correspondence courses.[245] Both full- and part-time students are included. We analyzed CPS data across socioeconomic and demographic lines. We are specifically interested in the predictor variables of household income, educational attainment, location of residence (metropolitan or not), gender, age, and race. We used a multivariate statistical model (probit) to estimate the socioeconomic and demographic effects on the probability of one's attending school. This kind of analysis enables us to estimate the independent relationship, for example, between income and school attendance while holding other important factors constant, like education level, race, gender, age, and location of residence.[246]

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[241] Robert B. Reich, "How Selective Colleges Heighten Inequality," *The Chronicle Review, The Chronicle of Higher Education* 15 Sept. 2000: B9.

[242] Reich.

[243] Reich.

[244] Current Population Survey data are collected by the U.S. Bureau of the Census. We pooled the data for the years 1996, 1997, and 1998 to increase the sample size.

[245] We used two questions to determine if one is attending school: *Is ... attending or enrolled in regular school? (Regular school includes elementary school and schooling which leads to a high school diploma or college, university or professional school degree.)*; and *Excluding regular college courses and on the job training is ... taking any business, vocational, technical, secretarial, trade, or correspondence courses?*

[246] Detailed information on the model specification and parameter estimates can be found in Appendix D.

We examine two age groups, 15 to 24 years old and 18 to 44 years old. The first group (15 to 24) constitutes the prime school attending years for *high school and college*.[247] The second group (18 to 44) constitutes the prime postsecondary school attending years for full- and part-time students.[248] We present the predicted probability for individuals in Kentucky and the United States in Table 8.

Table 8 contains at least two key points. First, income plays a large role in whether one attends school. This is true for both age groups and is "more true" in Kentucky than for the nation. Kentuckians 15 to 24 years old in the highest income quartile are about 1.6 times more likely to be attending school than those in the lowest income quartile, and Kentuckians 18 to 44 years old in the highest income quartile are approximately 1.8 times more likely to be attending school than those in the lowest income quartile. These ratios are much higher than those for the U.S., which are 1.3 and 1.3 respectively.[249] Second, there is a much larger difference between men and women in Kentucky than there is nationally. In Kentucky, women are much more likely to be attending school than men. For example, among the 15 to 24 year olds in the lowest income quartile, women are about 1.3 times more likely than men to be in school. We find similar differences between Kentucky men and women as we examine the other income quartile and age group. By comparison, the gender differences between men and women nationally are quite small.

TABLE 8
Predicted Probability of Attending School for Men and Women, by Income Quartile, Kentucky and the United States

	Kentucky			
Age: 15- to 24-Years	**Income Quartile**	**All**	**Men**	**Women**
	Lowest	46.3	40.5	51.4
	Highest	72.0	66.9	76.2
	United States			
	Lowest	56.9	56.4	57.4
	Highest	76.2	75.7	76.6
	Kentucky			
Age: 18- to 44-Years	**Income Quartile**	**All**	**Men**	**Women**
	Lowest	6.0	5.1	6.9
	Highest	10.9	9.5	12.3
	United States			
	Lowest	11.9	11.1	12.8
	Highest	15.3	14.2	16.3

Note: Refer to Appendix D for technical notes.

As we reported in 1998, students from poor, uneducated families are often discouraged from pursuing postsecondary education and persisting as postsecondary students by what is more likely to be an inadequate academic foundation. Were that foundation equal, outcomes would likely be much different. According

[247] Unfortunately, the sample size was too small to examine the 18- to 24-year-old group.

[248] We used the college enrollment by age of student data for fall 1998 to determine our age groups. The data show that a significant percentage of part-time students at both two- and four-year institutions are between 25 and 44 years old. Refer to *The Chronicle of Higher Education Almanac* 1 Sept. 2000: 24.

[249] These ratios can be calculated from the numbers in the column titled "All."

to the University of Pennsylvania Institute for Research on Higher Education (IRHE), at-risk students who have the threshold mathematics and language skills have virtually the same chance of academic success in college as all other students.[250] Mastery of the so-called "gateway competencies"[251] has also been linked to socioeconomic status by researchers at Mathtech Inc. in Princeton, who found that students in high-income families were more likely than those in low-income families to take the math and science courses needed to prepare them for post-secondary attendance.[252]

Table 9 shows survey results for Kentucky high school students and suggests that what is true nationally might also be true here.[253] Students from lower-income households are less likely to have taken college preparatory classes. For example, about one third (35 percent) of students from households where the annual family income is less than $20,000 report that they have taken Advanced Placement courses, compared to about one half (47 percent) of the students from households where the annual family income is more than $70,000.

TABLE 9
Estimated Percent of 16- and 17-year-old Kentucky High School Students Who Have Taken College Preparatory Classes, by Family Income

	Family Household Income, 1999			
	Less than $20,000	$20,000 to $40,000	$40,001 to $70,000	More than $70,000
Algebra II or its equivalent	76	83	90	92
Chemistry I or Physics I	73	77	84	91
Foreign Language (2 years)	51	59	77	89
Advanced Placement (AP) Courses	35	31	44	47

Note: Refer to Appendix C for information on the Center's high school survey. Also, the percentages shown here are *estimates*. The 95 percent confidence levels are presented in Appendix C.

Poor and low-income students also face a range of financial obstacles when deciding whether to seek postsecondary education. Tuition may be the most formidable. Nationally, tuition at public, four-year colleges and universities increased 234 percent between 1980 and 1995 while household income rose just 82 percent, and the cost of consumer goods increased 74 percent.[254] Over the same period in Kentucky, tuition rose 235 percent at the Universities of Kentucky and Louisville, 193 percent at the state's regional universities, and 146 percent at the community colleges. Since the mid-1990s tuition increases have been relatively small. Last year's average increase for public four-year institutions was only 3.3 percent,[255] but in the fall of 2000 tuition and fees at public four-year colleges was up an aver-

[250] Zemsky 6.
[251] Zemsky 6.
[252] Karen Akerhielm, Jacqueline Berger, Marianne Hooker and Donald Wise, *Factors Related to College Enrollment* (Washington: U.S. Department of Education, 1998) ES-4.
[253] Refer to Appendix C for additional information on the high school survey.
[254] General Accounting Office, *Higher Education: Tuition Increasing Faster than Income and Public Colleges' Costs* (Washington: Government Printing Office, 1996).
[255] Jeffrey Selingo, "Tuition Surges at Public Colleges After Years of Modest Increases," *The Chronicle of Higher Education* 22 Sept. 2000: A30.

age 4.4 percent, according to the College Board.[256] While the escalating cost of higher education is often justified by the significant lifetime returns it yields, the immediate effect of its cost is likely to be far more daunting to low-income and poor families.

Because the cost of higher education ordinarily demands investment beyond tuition and books, namely housing, food, utilities and clothing, the total cost of higher education can appear unmanageable to many poor families. Again, Mathtech researchers found that parental perceptions strongly influence the decisions of their children. Students whose parents said they could not see a way of financing college were less likely to pursue postsecondary education. Parents in the lowest income categories were far more likely to express doubts about the financial feasibility of their children attending college.[257]

Further, even among students with high test scores, family income influenced perceptions about the affordability of college as well as college attendance. Parents in the lowest income category were more than four times as likely to say they could see no way of affording college and almost twice as likely to say they had been unable to get information on applying for financial aid.[258] These parental perceptions resonated with their children. Among the top-scoring students studied, 57 percent of those from the lowest income category said they did not plan to attend postsecondary education because they could not afford it, compared with 38 percent from the middle-income group and 21 percent from the high-income group.[259] Fully 19 percent of low-income, top-scoring students reported they could not attend postsecondary schooling because they needed to help support their families.[260]

In Kentucky, findings from the Center's 2000 survey of high school students suggest that a substantial portion of the state's young people see the cost of postsecondary education as an obstacle. A sample of 16- and 17-year-old Kentucky high school students were asked: *How much of an obstacle do you think the cost of going to college will or would be to your going to college?* An estimated 21 percent said, "Not an obstacle," but 50 percent replied, "Somewhat of an obstacle," and 29 percent answered, "A major obstacle." And perhaps most striking is the difference between those students from families with less than $20,000 in annual income and those from families making over $70,000 annually. Figure 22 shows that an estimated 64 percent of the students from the lower income group view cost as a major obstacle, compared to only 6 percent of the students from the higher income group.

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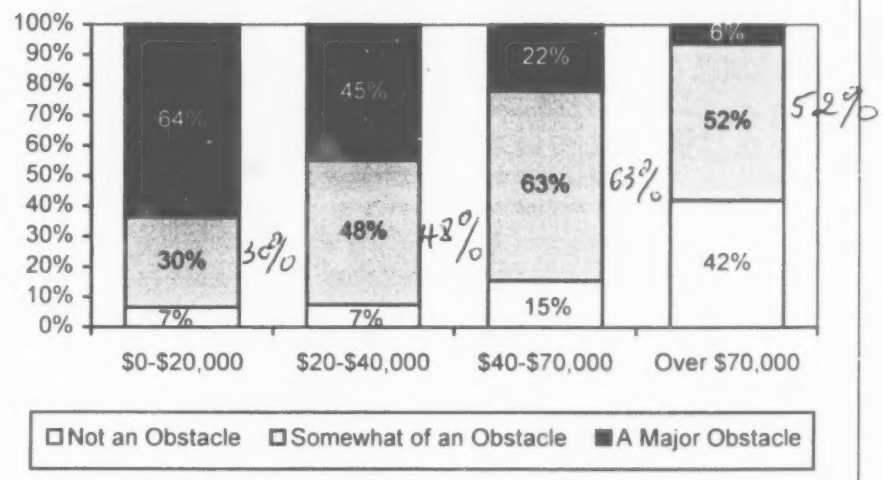
[256] "Survey Finds College Cost in U.S. Rising Faster Than Inflation," CNN web site, 16 Oct. 2000, 16 Oct. 2000 <http://www.cnn.com/2000/US/10/16/college.costs.ap/index.html>.
[257] Akerhielm, Berger, Hooker, and Wise.
[258] Akerhielm, Berger, Hooker, and Wise 47.
[259] Akerhielm, Berger, Hooker, and Wise 25.
[260] Akerhielm, Berger, Hooker, and Wise 25.

FIGURE 22
Perceptions of College Costs as an Obstacle to Attending College, by Annual Family Income



Source Kentucky High School Survey, 2000

Students from poor families are also discouraged by the dual demands of earning and learning that they disproportionately confront. Again, when national studies considered the experiences of top-scoring students alone, 81 percent of those from the lowest income group reported working while taking academic courses, compared with 72 percent from the middle-income group and 55 percent from the highest income group.[261] While the demands of student employment are frequently cited as lengthening the time required to complete course requirements, they clearly have a disproportionate effect on students from low- and middle-income families.

According to the Institute for Research on Higher Education, "The nation drifts further toward a practice of educational triage—in which the most likely survivors are known in advance and accorded a lion's share of the resources the public makes available in support of public higher education." The "most likely survivors," research confirms, are products of middle- and upper-income families with the financial and social resources to enhance academic outcomes and enable access. And those who do not flourish or "survive" in today's economy because they lack postsecondary education and training are precisely those whom noble investments in public education were once intended to benefit most—the nation's poor.

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[261] Akerhielm, Berger, Hooker, and Wise ES-3.

Stubborn Gaps in Health Care

A July 2000 report on health care systems worldwide by the World Health Organization (WHO) illustrates a singular failing of the U.S. economy. Though the United States spends more per person on its blended public-private health care system than any other nation in the world, the WHO ranked it 37th in the world in how well it prevents illness and serves the poor and minorities.[262] The low ranking relative to other industrialized nations, according to the WHO, is the result of "third worlds" within the country, populations of principally working-poor Americans who cannot afford routine health care.[263] As a consequence, a higher than average incidence of chronic disease and lower life expectancies is evident among minority and low-income populations here.[264]

Gaps in U.S. health care remain one of the most troubling of the nation's persistent inequities, one of the most vexing issues before policymakers at both the federal and the state level, and, many public opinion surveys suggest, the most important issue to citizens. While the portion of the U.S. population with health insurance increased in 1999 for the first time since 1987, the gap in access to health insurance remained clearly linked to economic status. Indeed, the insured status of the poor did not change. What's more, the problem of access could worsen in the years ahead if the costs of health care and health insurance continue to accelerate.

Economy Lifts Insured Rates

In 1999, the longest running period of U.S. economic growth finally began to lift more Americans into the insured category. Like income inequality, the nation's relative economic health had done little to change circumstances in the lives of millions of Americans without health insurance, the primary reason why Americans delay seeking health care. For the first time since 1987, the Census Bureau was able to report in September 2000 that the percentage of Americans without health insurance had declined between 1998 and 1999. Employment-based health insurance was "the driving force."[265] In an era of tight labor markets, health insurance coverage has become an important bargaining chip for employers in the pursuit of reliable employees and predictable labor supplies. Even many previously marginal jobs in retail sales and food service that rarely offered bene-

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[262] Lauran Neergaard, "U.S. Ranks 37th in Quality of Health Care," *Lexington Herald-Leader* 21 June 2000.

[263] Neergaard.

[264] Centers for Disease Control and Prevention, *Health, United States, 1998* (Washington: Department for Health and Human Services, 1998).

[265] Robert Pear, "Number of Insured Americans Is Up for First Time Since '87," *New York Times on the Web* 29 Sept. 2000, 11 Oct. 2000 <http://www.nytimes.com/2000/09/29/national/29INSU.html>.

fits in the past have begun doing so to bolster employee recruitment efforts and increase the stability of labor forces.

According to the Census Bureau's March Current Population Survey, the number of uninsured Americans in 1999 dropped by an estimated 1.7 million persons from the previous year, and the percentage of the population without health insurance decreased from 16.3 percent in 1998 to 15.5 percent in 1999. Private, employment-based coverage increased by 0.8 percent, a statistical mirror of changes in the larger population of insured Americans. By contrast, the overall coverage rate of government insurance programs did not change significantly.[266]

While the Medicaid Program provided insurance for an estimated 12.9 million poor people, 10.4 million of the poor remained without insurance in 1999, 10 million of them children. However, the proportion of uninsured children declined to 13.9 percent, the lowest rate since 1995.[267] The federally funded Children's Health Insurance Program has provided health insurance to more than 2 million children, but a significant portion of the three-year allocation has gone unspent. Kentucky is one of only 10 states that will not forfeit the funds allocated for expanded Medicaid coverage of poor and low-income children.[268]

Based on the Census Bureau's estimates, the percentage of Kentuckians without health insurance remained below the national average, but the year-to-year change in the state's uninsured population was not statistically significant. The estimated three-year, 1997-1999 average for Kentucky was 14.5 percent, compared with 16 percent at the national level. At a 90 percent confidence interval, Kentucky's uninsured population ranks near the middle of all states for the three-year period, while a group of states that rank among those with the nation's highest poverty rates[269] (Texas, Arizona, New Mexico, California, and Louisiana) were found to have the highest uninsured rates. The lowest rates were reported in Minnesota, Rhode Island, and Hawaii,[270] each of which has adopted aggressive measures to lower their uninsured population.[271]

We should note that at a 95 percent confidence interval, Kentucky's uninsured rate could have ranged from as low as 13.5 percent to as high as 15.5 percent. Consequently, the percent of the state's population that is uninsured is smaller than at the national level, but we do not know how much. The difference between the two-year moving averages (1997-1998 and 1998-1999) for Kentucky again are not statistically significant, but they suggest a somewhat more modest decline (.2 percent) than at the national level (.3 percent).[272]

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[266] Robert J. Mills, "Health Insurance Coverage, 1999," *Current Population Reports*, U.S. Bureau of the Census, Washington, D.C., Sept. 2000: 1-2.

[267] Mills 1-2.

[268] Robert Pear, "40 States Forfeit Health Care Funds for Poor Children," *New York Times on the Web* 24 Sept. 2000, 25 Sept. 2000 <http://www.nytimes.com/2000/09/24/national/24HEAL.html>.

[269] U.S. Census Bureau, "Poverty 1999," U.S. Census Bureau Web site, 11 Dec. 2000 <http://www.census.gov/hhes/poverty/poverty99/pv99state.html>.

[270] Mills 11.

[271] See Michal Smith-Mello, Julia Field Costich, and F. Douglas Scutchfield, *What Next for Kentucky Health Care?* (Frankfort: Kentucky Long-Term Policy Research Center, 1999) for a discussion of these and other state-level initiatives designed to reduce uninsured populations. The report is available online at <www.kltprc.net>.

[272] Mills 10.

While increases in the number and percentage of Americans who had health insurance in 1999 were welcome news, the percent of the poor who were uninsured did not change statistically between 1998 and 1999; 32.4 percent of those with incomes below the poverty level remained uninsured in 1999, twice the uninsured rate of the general population. However, the near-poor, those with incomes greater than the poverty rate but less than 125 percent of it, made significant gains, as the uninsured population declined from 29.9 percent in 1998 to 25.7 percent. The attendant benefits of the booming economy were evident as private insurance coverage of the near-poor increased by 3.4 percentage points while public coverage increased by 1.6 percentage points.[273]

Several factors continue to be associated with higher insured rates. As income, educational attainment, and the size of the firm in which an individual is employed increase, the likelihood of being insured does as well. Conversely, as employment status (full-time versus part-time), the size of firm in which an individual is employed, income, and educational attainment decline, insured rates decline also. Young adults in the 18-24 age group, many of whom are students in part-time jobs or relatively new labor force entrants whose earnings are low, continued to have the highest uninsured rates at 29 percent.[274]

Higher Costs on the Horizon?

While some economic analysts fretted over a rising rate of inflation that was expected to reach 3.8 percent for the year in 2000,[275] health care costs appeared to be on target to meet or exceed a predicted pace of nearly double that.[276] Costs to both public and private U.S. employers, according to William M. Mercer, Inc., a global benefits firm, were expected to rise 7.5 percent in 2000 and 12 percent in 2001.[277] In turn, the cost of health insurance premiums, co-payments, and deductibles has been steadily rising for employees. More recent studies suggest that the pace of cost increases may be even greater than expected during the coming year.

Based on findings from a survey of large employers, Hewitt Associates, a benefits consulting firm, reports that these employers will raise payroll deductions by an average of 20 percent and up the cost of deductibles and co-payments by 15 percent in 2001. Overall, employees of these large firms will pay an average of 18 percent, or $1,401, more in 2001.[278] Employers that face such double-digit increases in health insurance premiums are "starting to get panicky," observes Janet

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[273] Mills 3.
[274] Mills 7-8.
[275] David Leonhardt, "Pace of Inflation Picks Up Even as Economy Seems to Slow," *New York Times on the Web* 19 Oct. 2000, 19 Oct. 2000 <http://www.nytimes.com/2000/10/19/business/19ECON.html>.
[276] "Drugs and Other Medical Nondurable Expenditures and Average Percent Change, by Source of Funds: Selected Calendar Years 1970-2008," Table 11a, HCFA (Health Care Financing Administration) Web site (1999), 20 Oct. 2000 <http://www.hcfa.gov/stats/nhe-proj1998/tables/table11a.htm>.
[277] Laura Cohn and Phoebe Eliopoulos, "What Comes After Managed Care?" *Business Week* 23 Oct. 2000: 149-156.
[278] Freudenheim.

Trautwein, policy director for the National Association of Health Underwriters, in an interview with *The New York Times*.[279] New estimates of the coming cost of health care are also prompting some public sector uneasiness. Trustees of the Medicare program have now slashed four years off estimates of the program's future solvency on the recommendations of a panel of economists known as the Technical Review Panel. The trust fund will likely run out of money in 2021 instead of 2025 due largely to advances in medical technology that will push Medicare costs up faster than anticipated, the panel concludes. By 2010, the panel predicts that Medicare costs will be double their current level.[280]

New medical technologies and the soaring cost of pharmaceuticals are frequently cited as the driving forces behind rising costs. The direct marketing of pharmaceuticals to the public has led to surges in the use of certain drugs and, many have argued, resulted in higher costs for insurers—and consumers. Insurers have become less and less willing to shoulder the full cost of some widely prescribed drugs. In response, they have adopted higher co-payments and limited access to the more expensive drugs by narrowing their formularies to include only drugs for which they or surrogate pharmaceutical management firms have secured lower prices. Also contributing to the cost of health care is the increased demand for health care services created by an aging population. At the same time, providers and patients have rejected many of the constraints of managed care. Indeed, the controls managed care entities have sought to exert on patient behavior, ostensibly to prevent more costly long-term conditions, have alienated providers and patients enough to make patient rights a salient political issue at the national level.

During the early part of the decade, managed care and the controls it imposed on patient utilization appeared to be the answer to runaway costs, but some analysts see mounting evidence that long-term savings from managed care may be illusory.[281] Already, some larger, self-insured businesses are beginning to move into a post-managed care posture, adopting their own internal management strategies to hold costs down, contracting with networks of physicians directly or forming purchasing coalitions that exert pressures on HMOs to lift quality through greater attention to preventive medicine.[282]

Managed care's problems don't end there. Nationally, HMOs have also been in significant financial trouble, according to an analysis by *Governing* magazine. In 2000, an estimated two thirds of HMOs were losing money, and one in five lacked the reserve capital required by the National Association of Insurance Commissioners.[283] In mid-2000, some of the nation's largest managed care insurers jettisoned nearly 1 million seniors from the rolls of Medicare+Choice HMOs,[284] signaling a partial retreat from the movement of publicly financed health care to managed care, which many policymakers believed would yield long-term

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[279] Freudenheim.

[280] Robert Pe.., "Health Costs Underestimated, Experts Say," *New York Times on the Web* 30 Nov. 2000, 30 Nov. 2000 <http://www.nytimes.com/2000/11/30/national/30MEDI.html>.

[281] John Carey, "Managed Health Care Isn't Healthy After All," *Business Week* 24 July 2000: 40.

[282] Cohn and Eliopoulos.

[283] Lemov 33.

[284] Robert Pear, "Estimate of Ousters by H.M.O.s Is Raised," *New York Times on the Web* 25 July 2000, 25 July 2000 <http://www.nytimes.com/library/politics/072500medicare-hmo.html>.

savings. Moreover, the public backlash against the constraints of managed care has provoked a succession of legislative responses in states like our own, which have passed numerous mandates of care, as well as a number of so-called "bills of rights" for patients that permit lawsuits against managed care entities for punitive damages. Though limited state-level experience has not yielded such an outcome, insurers predict a flood of costly litigation will follow if we enact a federal patient's bill of rights, a hotly contested issue in the presidential and congressional races, further increasing the cost of health care and, in turn, health insurance.

Rising costs for health care and insurance and the persistent gaps in access to health care have again pushed health care to the top of the public agenda. An early 2000 survey conducted by the Harvard Opinion Research Program and the Kaiser Family Foundation found that Americans placed health care second only to education in election-year priorities.[285] In addition to its prominent and multifaceted role in the 2000 presidential campaign, health care remains a front- burner issue in Kentucky. In a 1999 survey conducted by the University of Kentucky Survey Research Center for the Kentucky Long-Term Policy Research Center, citizens of the Commonwealth cited accessible, high-quality health care for all citizens as the most important goal for the future of the state.[286]

Citizens have real reason for concern. If the present inflationary pace of health care costs continues, many small firms may again find health insurance too costly a business expense. Moreover, employers can be expected to continue shifting larger shares of the cost of health insurance to employees, and, as has happened in recent years, the rate at which employees take the health insurance offered by their employers could decline further.

Public pressure for change is likely to escalate further if the cost of health care continues to rise and health insurance becomes more costly and inaccessible. Diverse organized responses are already underway. In Massachusetts, a 2000 ballot initiative sought voter approval of a referendum to require health insurance for all citizens by mid-year in 2002.[287] In a still larger arena, legislators from six northeastern states met this past year to discuss ways of responding to rising costs and limited access, including the possible formation of interstate compacts.[288] Closer to home, activists in the city of Louisville have formed a coalition whose singular purpose is to find ways to expand access to health care through the cooperative efforts of providers.

As the Commonwealth's experience throughout the 20th century has shown, it is profoundly difficult to remedy and reverse the consequences of poverty. Limited access to health care among working poor families often results in significant long-term costs, exacting a societal cost that may ultimately be higher than that of closing the gap in health care.

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[285] "Health Care Nears Top of Voter Concerns in New Poll," *HSPH (Harvard) Web Digest* Feb. 2000, 12 Dec. 2000 <http://www.hsph.harvard.edu/digest/feb_health.html>.

[286] KLTPRC, *Visioning* ... 11-12.

[287] Carey Goldberg, "State Initiatives Seek Overhaul of Health Care," *The New York Times*, 10 June 2000: 1.

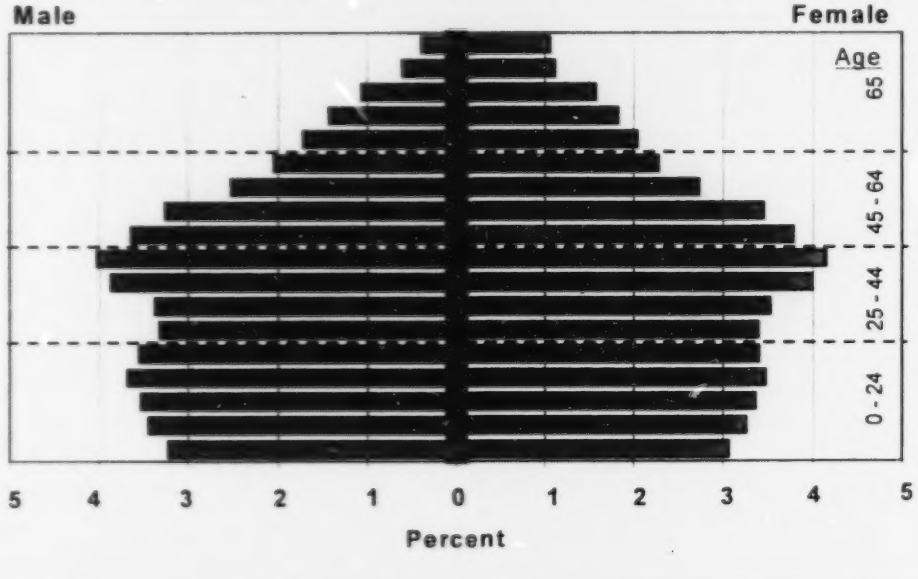
[288] National Conference of State Legislatures (NCSL), *State Health Notes*, 5 June 2000: 1.

MANAGING CHANGE

Though current economic conditions permit us to imagine a future of radiating prosperity and disappearing inequities, history offers little reason for confidence in such an optimistic scenario. Still in its infancy, today's technology-driven economy is unlikely to be immune from economic cycles akin to those we have experienced throughout our nation's history. Moreover, the speed at which our economy now moves and the interdependent nature of its global scope suggest that external forces could quickly alter economic conditions here in the United States. Though we cannot predict the arrival of the next recession with certainty, we can predict with some precision the coming shift in the makeup of our population. And it will most assuredly affect our economy and our ability to address inequities. How we manage these coming changes may determine our social and economic future throughout much of the first half of the 21st century.

Over recent decades, the classic pyramidal population structure characterized by an extensive youth population that continuously replenished the adult workforce, which, in turn, supported older members of our society, has disappeared. As shown in Figure 23, Kentucky's 2000 population structure is no longer pyramidal in shape, because our youth population has declined and our older

FIGURE 23
Kentucky Population Structure, 2000



population has increased. During the first half of the 21st century, our population structure will become more and more square shaped, with nearly equal populations from various age groups. The dramatic change will occur as the largest generation in history reaches retirement age and, like its predecessors, enjoys increasing longevity.

As this unprecedented demographic revolution unfolds, rising levels of dependency will almost certainly exert pressure on public budgets, possibly undermining our economy and deepening inequities. But the costs of caring for tomorrow's aging population are, like the federal budget surpluses that provided grist for the 2000 presidential campaign, uncertain. On the one hand, demographers and budget analysts foresee the potential for overwhelming public costs that could hinder the federal government's ability to meet its recurring obligations and respond to emerging needs. On the other hand, gerontologists systematically challenge the underlying assumptions of gloomy economic forecasts and remind us that this will be the most educated, wealthy and, importantly, healthy generation of older citizens in our history. Moreover, some surveys have found that Baby Boomers are indicating that they plan to stay active in the labor force for a longer time, a movement that, if realized, would represent a reversal of recent trends toward earlier retirements.

Inevitably, however, the costs of entitlements to older citizens, which already consume a significant portion of the federal budget and the fastest rising component of most state budgets, Medicaid, will rise. Rising Medicaid costs have already produced an expected budget shortfall here. In spite of increasingly optimistic budget surplus forecasts, some analysts conclude that acute fiscal pressures at the federal level could push more responsibilities down to the state and local level. As a consequence, the best-laid plans of policymakers could gradually be undermined by costs that exceed expectations and by demands that are simply unanticipated.

In Kentucky, our population is expected to have a larger proportion of older citizens than will be found in most states. And, given past poverty rates, which are significantly higher among older Kentuckians than their peers at the national level, need may be far more acute here. Thus, we will confront the challenge of meeting the needs of an older population long before most other states, and those needs may be far greater. The challenge could be formidable. And government, we find, is precisely where our aging population will look for support of the services they anticipate needing as they grow old. If we are to avert potentially devastating fiscal and human consequences, state and local governments will be challenged to fashion innovative and collaborative responses to the demographic revolution that lies just ahead.

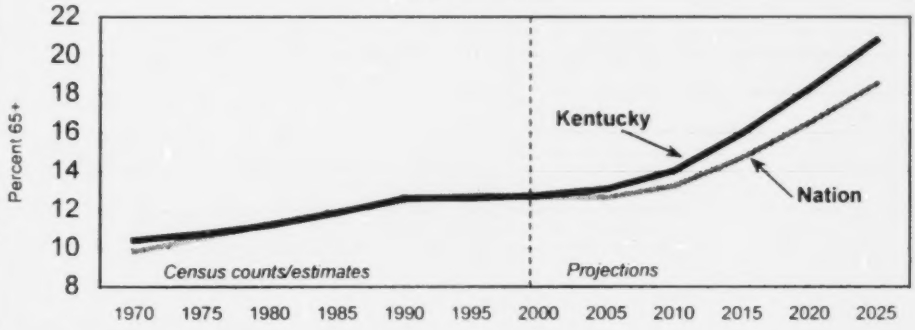
Kentucky's Aging Population

The aging of America's population has attracted increased attention, in both public and research arenas, during recent decades. The 1970s, for example, saw the entry into retirement ages of individuals born during a post-World War I fertility peak and saw elders for the first time representing about one

tenth of the total national population. That decade also gave witness to waves of retirement migration, especially toward selected states, of a magnitude that had never before been recorded. As we moved into this new century, almost 13 percent of the U.S. population was 65 or older, and growth in the oldest age groups (85 years and over) was more rapid than in any other segment of the population.

Kentucky has not been immune to processes that promote population aging. In 1970, for example, the Commonwealth had a slightly larger elderly population share (10.43 percent) than did the nation as a whole (9.83 percent; see Figure 24). This imbalance was largely a consequence of labor force outmigration from the state, which depleted numbers within younger age groups despite fertility levels that were slightly higher than national averages. Toward the turn of the century, the pace of aging was quite similar for both Kentucky and the nation. Fertility dropped, especially among teens, and the Commonwealth experienced labor force growth through net inmigration. A glance toward the future suggests an acceleration of aging within the state, so that by 2025 almost 21 percent of the state's population may fall within older age groups, compared to about 18.5 percent nationally.

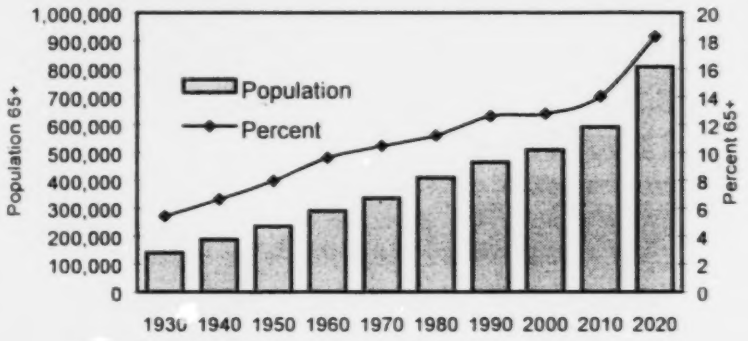
FIGURE 24
Change in Elderly Population Share
1970 to 2025



Source U.S. Census Bureau

Just over one-half million elders currently reside in the Commonwealth, and they account for about 13.0 percent of the total population. Recent growth in the elderly population—about 9.5 percent between 1990 and 2000—is actually slower than what has been experienced throughout most of the 20th century. Indeed, the most rapid growth occurred between 1930 and 1940, when the population increased over 33 percent, from around 142,000 to almost 190,000 individuals age 65 and over. The elderly share of the total population during this period increased from 5.4 to 6.7 percent, reflecting a simultaneous increase in size within younger age groups (see Figure 25). The next 20 years, through 1960, saw growth rates of about 24 percent per decade.

FIGURE 25
Change in 65+ Population Kentucky: 1930 - 2020



Source U S Census Bureau

Despite the nationwide recognition of an aging population during the 1970s, Kentucky's elderly population increases began to decelerate. Although still growing in size and as a share of the total population, the *rate* of growth during the 1970s fell to about 22 percent. The pace of growth continued to decline to only 13 percent during the 1980s and 9 percent during the 1990s, the lowest rate recorded during the century. The slowing of elderly population growth in recent decades, and especially through the 1990s, is principally because fewer people were entering into the 65+ age groups, a direct consequence of post-World War II labor outmigration from Kentucky. In fact, Kentucky's total population actually declined between 1940 and 1945 (from 2.86 million to 2.60 million) and between 1950 and 1955 (2.95 million to 2.91 million) as young individuals and families left the Commonwealth for job opportunities.

TABLE 10
Elderly Population Shares, US and Kentucky, 1970-2025

	US	Kentucky
1970	9.83	10.43
1975	10.53	10.77
1980	11.28	11.20
1985	11.90	11.85
1990	12.50	12.61
1995	12.78	12.61
2000	12.65	12.76
2005	12.64	13.09
2010	13.24	14.02
2015	14.72	15.99
2020	16.54	18.30
2025	18.54	20.80

Source U S Census Bureau

The trends of slow elderly population growth and little change in the share of the total population that is aged will not continue in Kentucky; however, labor migration trends reversed during the 1970s, and many of the young inmigrants of that period and later have now aged in place and will soon be retiring. The aging of Baby Boomers, which will be felt nationally, will be felt more acutely at the state level because of the peculiarities of migration that concentrated this population disproportionately within Kentucky. As a consequence of these forces, the U.S. Census Bureau ranked Kentucky 28th in 1995 among the

50 states and the District of Columbia in terms of the proportion of its elderly population. By 2025, however, the state is expected to rank 14th (see Table 11).[289] In terms of the *percentage point* increase from 1995 to 2025, Kentucky is expected to rank 12th in the proportion of the population that is 65 and older. Kentucky's 65+ population is predicted to increase by 8.6 percentage points, from 12.6 percent to 21.3 percent. However, State Data Center projections, as shown in Table 12, suggest that Kentucky's population may not be aging as rapidly as these Census Bureau data suggest.

TABLE 11
Projected Changes in Population 65 and Older, Kentucky and Selected States, 1995-2025

	Percent		Rank			
	1995	2025	1995	2025	Moved Positions	Percentage Point Change
Montana	13.1%	24.4%	23	3	20	11.3%
Oregon	13.6%	24.2%	17	4	13	10.7%
Idaho	11.3%	21.5%	41	10	31	10.2%
Colorado	10.0%	20.1%	48	26	22	10.1%
West Virginia	15.3%	24.9%	4	2	2	9.7%
Wyoming	11.3%	20.9%	43	18	25	9.6%
Nevada	11.5%	21.0%	39	15	24	9.5%
Arkansas	14.5%	23.9%	7	5	2	9.4%
North Carolina	12.5%	21.4%	31	11	20	8.9%
South Carolina	12.0%	20.7%	36	19	17	8.8%
Washington	11.6%	20.2%	38	24	14	8.7%
Kentucky	**12.6%**	**21.3%**	**28**	**14**	**14**	**8.6%**

Source: U.S. Census Bureau

TABLE 12
State Data Center Population Projections, 1997-2020

	1997	2000	2010	2020
0 to 17	961,202	946,717	934,432	923,890
18 to 64	2,458,029	2,546,618	2,693,890	2,653,227
65+	488,893	494,853	551,327	717,607
TOTAL	3,910,121	3,990,188	4,181,659	4,296,744
	Percentages			
0 to 17	25%	24%	22%	22%
18 to 64	63%	64%	64%	62%
65+	13%	12%	13%	17%

[289] "Kentucky's Population Projections: 1995 to 2025," U.S. Census Bureau Web site (2000), 17 Nov. 2000 <http://www.census.gov/population/projections/state/9525rank/kyprsrel.txt>.

Age and Sex Characteristics. Kentucky's aging population should be viewed with regard to population diversity, or the mix of people according to their characteristics. Within the elderly population, for example, older ages commonly include those with poorer health and more disabilities than younger elders, and older elders potentially place a higher demand on service programs and institutions. The pre-retirement population is commonly viewed as the caregivers, through individual efforts or through their labor in service industries and contributions through taxes. Young elders, aged 65 to 74 years in general, often are quite healthy and contribute social benefits through care for older parents, volunteerism, and discretionary spending.

Looking at the anticipated changes in Kentucky's population age structure, it could be argued that the state may be in a more favorable position in terms of its elders than the nation as a whole (see Table 13). The population of Kentucky is expected to age more rapidly than most other states when the percent aged 65 and over is considered alone. Yet the oldest-old (age 85+) will comprise a smaller share than the nation, suggesting that service demands in the state may be less than the national average. By 2020, Kentucky will also have a larger share in the youngest elderly ages (65-74 years) and a larger share in the pre-retirement years of 45 to 64 years; both of these age categories tend to offer net benefits to society.

TABLE 13
Projected Change in Age Structure, 1980-2020,
Kentucky and the United States

Age Group		Kentucky			United States		
		1980	2000	2020	1980	2000	2020
0 to 44	Number	2,564,591	2,536,023	2,403,431	156,493,716	179,303,787	190,248,327
	Percentage	*70.06*	*63.57*	*54.49*	*69.08*	*65.13*	*58.55*
45 to 64	Number	686,358	944,567	1,200,054	44,502,662	61,167,298	80,945,616
	Percentage	*18.75*	*23.68*	*27.21*	*19.64*	*22.22*	*24.91*
65 to 74	Number	248,988	278,860	496,147	15,580,605	18,188,857	31,461,779
	Percentage	*6.80*	*6.99*	*11.25*	*6.88*	*6.61*	*9.68*
75 to 84	Number	125,804	172,873	231,805	7,728,755	12,334,552	15,507,700
	Percentage	*3.44*	*4.33*	*5.26*	*3.41*	*4.48*	*4.77*
85+	Number	35,036	57,222	79,382	2,240,067	4,311,884	6,763,276
	Percentage	*0.96*	*1.43*	*1.80*	*0.99*	*1.57*	*2.08*
65+	Number	409,828	508,955	807,334	25,549,427	34,835,293	53,732,755
	Percentage	*11.20*	*12.76*	*18.30*	*11.28*	*12.65*	*16.54*

Source: U.S. Census Bureau

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Cost Implications of an Aging Population

The projected growth in spending on Medicare, Medicaid, and Social Security dominates the long-term federal budget outlook. If current policies at the federal level remain the same, spending on these three programs is likely to grow significantly faster than the economy as a whole over the next few decades. By 2040, the Congressional Budget Office (CBO) projects, spending on these three programs could account for about 17 percent of gross domestic product (GDP), which is over double the current 8 percent.[290] And if proposals to increase benefits in any of these programs are adopted, spending growth will be even more rapid, which will result in an even greater share of the gross domestic product going to these programs.

The anticipated increases in health and retirement spending are due to three factors. First, as the Baby Boom generation retires, expenditures for Social Security and Medicare will increase considerably. Second, Americans are living longer and spending more time in retirement. Third, the cost of health care is expected to keep increasing.

Moreover, the demographic changes projected over the coming decades will significantly alter the ratio between retirees and workers and thereby affect both sides of the federal, state, and local government's budgetary ledger. According to CBO, "In 1960, 5.1 workers supported each beneficiary in the Social Security program; today, the ratio is about 3.4 to 1, and in 2040, it is projected to fall to just 2.1 workers per beneficiary."[291] Consequently, the growth of federal outlays for Social Security and Medicare will increase rapidly while the *growth* of revenues from taxes that largely fund these programs will slow.

Kentucky's older population, which is expected to be larger than in many states, will almost certainly increase demand for public services at the state as well as the federal level. A significant portion of the cost of Medicaid, three quarters of which is spent on nursing home or adult day care for older recipients, is paid for by the Commonwealth. Indeed, Medicaid has been the fastest rising public cost in the state of Kentucky for a number of years. Moreover, Kentucky's older citizens have historically been disproportionately poor and thus more likely to rely heavily on a combination of federal and state programs for support. We also know that a significant percentage of Kentuckians will depend on Medicare and Social Security in their retirement.

In a collaborative project with the University of Kentucky Sanders-Brown Center on Aging, the Kentucky Long-Term Policy Research Center has surveyed Kentucky citizens 45 years old and older to determine the extent of their current and anticipated reliance on these programs.[292] For example, our sample of Kentucky citizens reveals that 54 percent of current retirees depend on Medicare as their most important source of health care in retirement, while 46 percent of those not yet retired believe that Medicare will be the most important source of health

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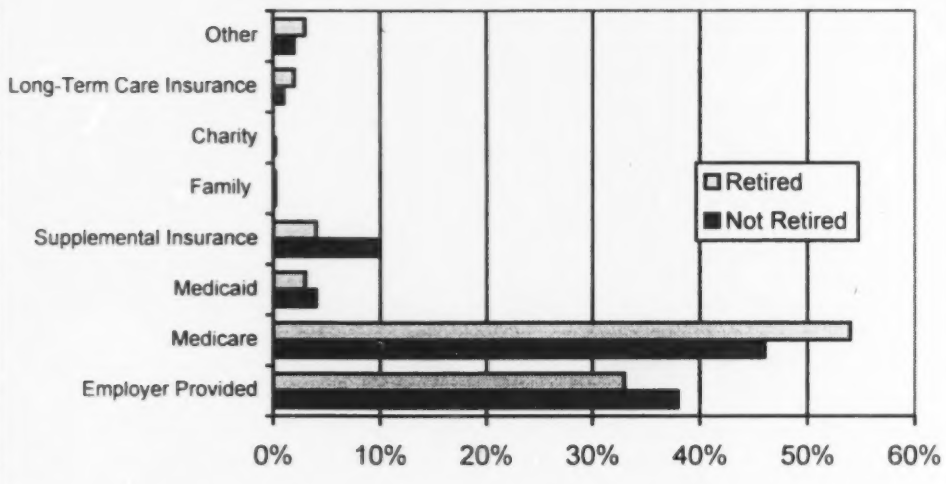
[290] Congressional Budget Office (CBO), *The Long-Term Budget Outlook* (Washington: Author, Oct. 2000). CBO Web site, 25 October 2000 <http://www.cbo.gov>.

[291] CBO, *The Long-Term Budget Outlook*.

[292] Refer to Appendix E for information about the Kentucky Retirement Survey.

care in their retirement. As Figure 26 shows, Medicare is the most important source of health care for both groups.

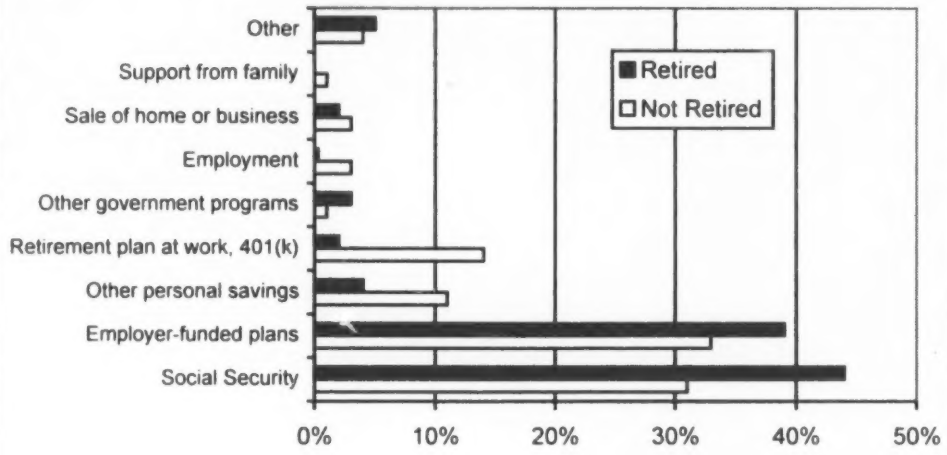
FIGURE 26
Which source of health care will be most important for you in retirement?
(Percentage of Respondents)



Source: Kentucky Retirement Survey, 2000

Concerning Social Security, a significant percentage of Kentucky's retirees list it as the most important source of their retirement income (44 percent), and about one third (31 percent) of those not yet retired believe Social Security will be the most important source of income in their retirement (see Figure 27).

FIGURE 27
Which source of income will be or is the most important for you in retirement?
(Percentage of Respondents)



Source: Kentucky Retirement Survey, 2000

What is true in Kentucky is true across the country: current and future retirees will depend heavily upon Medicaid, Medicare, and Social Security. The heavy reliance many Americans have and will have on these programs will cause their aggregate share of the budgetary pie to increase substantially as the Baby Boomers retire.

Implications for State and Local Governments: More Heavy Lifting

Despite the expected federal budget surpluses over the next decade, some economists believe the increased burden the Baby Boomers will place on the federal government will in turn create a heavier burden for state and local governments.[293] According to C. Eugene Steuerle, an economist with the Urban Institute who recently chaired the Technical Panel advising the Social Security Administration on its methods and assumptions, "There will be extraordinary pressure upon states and localities to self-finance much of what they want to do in the near future." It will be problematic for the federal government to assume new financial responsibilities to help address the "persistent inequalities" we described in the previous chapter. In fact, for both fiscal and political reasons, some

[293] C. Eugene Steuerle, untitled speech, Kentucky Long-Term Policy Research Center Annual Conference, "Challenge for the Next Century," Covington, Kentucky, 14 Nov. 2000.

believe that we are in the midst of "an historic shift of responsibility and authority for major social programs from the federal government to the states."[294]

According to the National Association of State Budget Officers (NASBO), "The share of total state spending financed by federal funds declined from 26.3 percent in fiscal 1996 to 25.8 percent in fiscal 1997. Federal aid to states is expected to continue on a downward trend for the foreseeable future."[295] Indeed, the percentages decreased to 25.1 percent in fiscal year 1998 and 25.2 percent in fiscal year 1999.[296] As Baby Boomers begin to retire in large numbers, it will become increasingly unlikely that this downward trend will reverse course. It appears that either by default or by design the federal government could gradually divest itself of responsibility for administering and funding an array of programs. This means, of course, that the state's financial burden could become heavier in the future.

Though it defined the 2000 presidential election, a predicted surplus in federal funds is not the sort of thing that ordinary families hang their hats on. And, indeed, the promised benefits of the surplus may never materialize. While the Congressional Budget Office predicts an accumulated surplus over the next 10 years of up to $4.6 trillion, the forecasts are based upon assumptions that might not hold.

A range of variables will determine the extent of the much-promised surplus, not the least of which will be levels of federal spending to shore up and meet the cost of entitlement programs that serve the elderly. Indeed, Dr. Steuerle has warned that the surpluses are only temporary and will dissipate as the Boomers retire. The Congressional Budget Office has issued its own cautionary notes about its future budget forecasts, warning that budgetary outcomes could differ considerably from projections, depending on future economic performance, policies, and the performance of the New Economy, among other things. CBO's own budgetary scenarios suggest that the surplus could vary by as much as $1 trillion and that the budget could again recede into a deficit within a few short years.[297] In an era of fiscal constraint, it is likely that governments will look increasingly to community-based organizations, nonprofits, businesses and citizens to forge partnerships and relationships to meet new challenges and help manage the change.

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[294] Urban Institute, "Assessing the New Federalism: Research Focus," Urban Institute Web site (2000) 10 Nov. 1998 <http://newfederalism.urban.org/html/research.html>.
[295] National Association of State Budget Officers (NASBO), NASBO Web site, 7 Nov. 1998, 19 Nov. 2000 <http://www.nasbo.org/pubs/exprpt/serexec.htm>.
[296] NASBO.
[297] CBO.

How Will We Manage These Changes?

". . . what political power could ever carry on the vast multitude of lesser undertakings which the American citizens perform every day with the assistance of the principle of association?"

Alexis de Toqueville

As we face the imminent possibility of extended life expectancies dictating economic policy in the United States, the question of how to expand our resources looms large. While eloquent arguments are being made for age as an entitlement, the breadth of the aging population is likely to exceed the capacity of a labor force depleted by lower birth rates to provide for dependent Baby Boomers. Many fear that costs will prove overwhelming. In addition to the unresolved issues of how to sustain Social Security and Medicare and address unmet health care needs, society will be challenged to develop new modes of housing, transportation, services, and institutional care. Given the potential cost of meeting the needs of a large older population while maintaining our commitment to future generations, it will be necessary to find new ways to solve problems that government cannot realistically meet alone and, at the same time, to increase public sector efficiency and, thus, expand its reach.

At every level, the future will demand that we increase our capacity to serve. The "principle of association" to which Alexis de Toqueville, an observer of our then relatively new democracy in the first half of the 19th century, refers may prove to be the very strength that will enable our society to manage higher as well as lesser undertakings. Indeed, the civic capacity of our communities or, as it has come to be known, "social capital" is the "Tocquevillean milk"[298] on which most of us were raised. It is canonized in our state motto, "United we stand, divided we fall." It resonates throughout our churches, schools, and state houses. And its often unacknowledged role in our society is likely to become increasingly important as demands on the public sector threaten to exceed its fiscal capabilities.

A prominent (and sometimes controversial) researcher seeking to better understand and measure social capital is Harvard professor Robert D. Putnam. Putnam first argued in a January 1995 essay, "Bowling Alone," that U.S. civic capacity had declined, that fewer people gathered together in activities like league bowling or civic organizations. Jolted by learning that the data he originally used to underpin his controversial 1995 argument had been incorrectly compiled by the government,[299] Putnam returned to the issue, mined extensive new data, and made his case anew in the now book, *Bowling Alone,* which was published in 2000. In *Bowling Alone* the book, he again concludes that we have too little of what makes us strong. The culprit forces that have undermined our civic capacity, he finds, are the twin pressures of time and money, which limit the capacities of families and individuals to contribute; the isolating effects of sprawl and suburbanization: the diversions of electronic entertainment, and, most important, generational change.

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[298] John Clark, "Shifting Engagements: Lessons from the 'Bowling Alone' Debate," *Hudson Briefing Paper* Oct. 1996: 13.

[299] Richard Morin, "Community Building Vs. 'Bowling Alone,'" *The Courier Journal* 23 July 2000: D1.

Putnam attributes as much as half of the decline in our civic capacity to the latter, gradual, generation-to-generation erosion of our connectedness.[300]

In the wake of Putnam's original essay, the question of how much civic energy we have here in the United States generated volumes of contentious academic and journalistic writings. Perhaps more to the point, one Putnam makes in his recent book, is the question of how we can tap more social capital to meet an unprecedented societal challenge. As projections warn, it is a challenge that government alone cannot meet. Thus, the intangible force of social capital to which Putnam and others have devoted so much energy in recent years is likely to become a critical ingredient in the future.

While social capital is, as Coleman has observed, the least tangible form of capital,[301] research from numerous disciplines suggests it may be among the most important. And the skills needed to expand participation in civic life—namely, leadership and team building—are being cultivated in a number of venues, increasing the capacity of citizens to act in new ways.[302] From regional and local leadership development programs to workplaces that are tapping collaborative skills to maximize productivity and profitability, participatory skills have been accruing in our society. Though much remains to be learned about such capacity-building programs, the Kentucky Long-Term Policy Research Center found in a 1998 study that participation in a leadership development program is associated with higher commitments of volunteer hours.[303] Thus, we may be taking important steps to expand our capacity to serve.

Today, however, we find that many of the nation's most powerful "associations" have taken on new forms and roles, those of centralized, professional lobbying organizations whose members are no more than names and addresses in a database used principally for educational and fundraising purposes. While one such organization, the American Association for Retired Persons, has been a highly effective advocate for the interests of aging Americans, it cannot meet nor is its purpose to meet the community-level needs of older citizens. What is needed instead is social capital that emanates from a strong sense of community and works at the community or local level. Granted, we have a good bit of it, but if social capital is indeed in decline while need will almost certainly be on an upward trajectory, societal gaps could become gulfs.

Central to the debate over social capital is whether one of its most important components, volunteerism, can fill current, much less future, gaps in social needs. Volunteerism was once openly criticized as a thinly veiled effort to undermine public sector responsibility for social and economic problems. Today, volunteerism or civic engagement is widely recognized as a necessary and appropriate response to private need, one that should be encouraged and rewarded. But, if Putnam's assessment of the decline of civic engagement is correct, as Clark observes, "We may be taking a big risk to shift much of the relief provided by the

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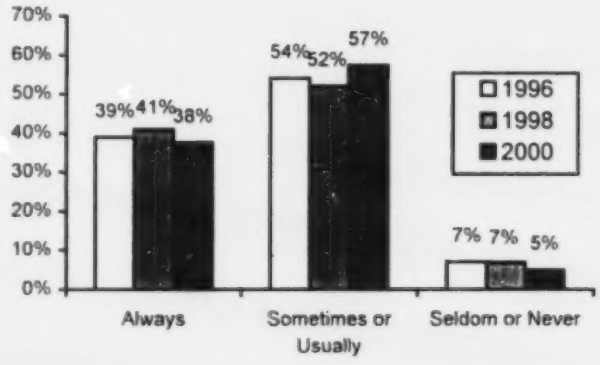
[300] Robert D. Putnam, *Bowling Alone* (New York: Simon and Schuster, 2000).
[301] John Coleman, *Foundations of Social Theory* (Cambridge, MA: Belknap Press of Harvard University, 1990).
[302] Coleman.
[303] Peter Schirmer, Ryan Atkinson, Jeff Carroll, and Michal Smith-Mello, *Civil Society in Kentucky* (Frankfort: Kentucky Long-Term Policy Research Center, 1998).

welfare state to voluntary organizations."[304] While our recent experiences with welfare reform suggest that civic capacity remains strong here and across the United States and can be successfully marshaled to meet emerging needs, the question posed by Clark in 1996 remains unanswered. Do civic organizations, churches, nonprofits and interested citizens have the capacity to assume an additional burden of responsibility for public well-being?

Aging citizens themselves could become one of the most significant components of our civic life, uniting to help meet the needs of their peers, as companions, helpers, and advocates. Freedman argues that older citizens could reformulate the nation's societal glue. While older Americans have been the least likely to volunteer their time in the past, they could become a valuable civic resource with the right incentives and structure in place, Freeman argues,[305] making contributions that may well exceed the demands many predict they will place on society. Similarly, Roszak argues that the maturing of America offers a remarkable opportunity to remake ourselves in a more humane mold and urges elders to take up the challenge.[306]

How Much Social Capital Is Enough? According to Putnam's analysis of the reservoir of civic capacity at the state level, Kentucky has far too little of the civic energy needed to manage the formidable fiscal and human challenge of the future. In each of the five categories of measurement used by Putnam, the Commonwealth falls well short of the mark. Specifically, Putnam examined measures of community and organizational life, engagement in public affairs, community volunteerism, informal sociability, and social trust.[307] The South in general, Putnam found, has the most depleted reservoir of civic capacity. Only six states, all in the deep South except Nevada, had lower scores on the measures than Kentucky and four other southern states (West Virginia, North Carolina, South Carolina, and Texas). Conversely, states located in the northcentral heart of the nation, "centered over

FIGURE 28
Do you feel safe in your community?



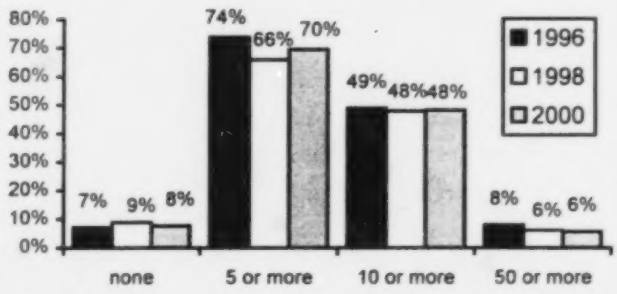
Source Kentucky Long-Term Policy Research Center and UK Survey Research Center

[304] Clark 9.
[305] Mark Freedman, "The Aging Opportunity," *The American Prospect* 1996: 39.
[306] Theodore Rozak, *America the Wise* (Boston: Houghton Mifflin, 1999).
[307] Putnam, *Bowling Alone* 290-295.

the headwaters of the Mississippi and Missouri Rivers,"[308] scored highest on the index.

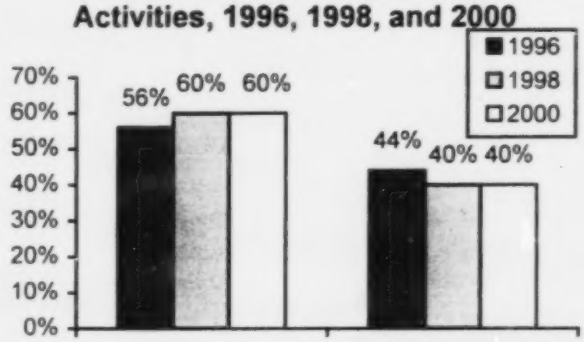
Generally, when Putnam correlated the social capacity index with measures of social well-being, such as educational attainment, crime rates, public health, and mortality rates, he found that states with low reservoirs of social capital were far more likely to have problems. For example, in those states where children flourish by traditional measures such as the Kid's Count Index, the social capital index was high. Likewise, public health was found to be better and mortality lower in states with high levels of social capital.[309]

FIGURE 29
How many people can you rely upon in a time of need?



Source Kentucky Long-Term Policy Research Center and the UK Survey Research Center

FIGURE 30
Percent of Kentuckians Who Volunteer for Community Activities, 1996, 1998, and 2000



Soruce Kentucky Long-Term Policy Research Center and UK Survey Research Center

Significantly, citizens who responded to a Kentucky Long-Term Policy Research Center survey conducted by the University of Kentucky Survey Research Center in 1999 cited "safe and caring communities" as the most important goal for the future. On a similar survey conducted two years earlier, citizens cited caring communities as the state's most important goal for the future.[310] Thus, in terms of our fundamental values, Kentuckians clearly view compassionate, caring communities as a very high priority.

We find substantial evidence of strong social capital in Kentucky. For example, two measures of civic health show that Kentuckians feel safe in their communities and enjoy fairly strong levels of interdependence. In 1996, 1998, and 2000 the overwhelming majority of

[308] Putnam, *Bowling Alone* 292.
[309] Putnam, *Bowling Alone*.
[310] KLTPRC, *Visioning* ....

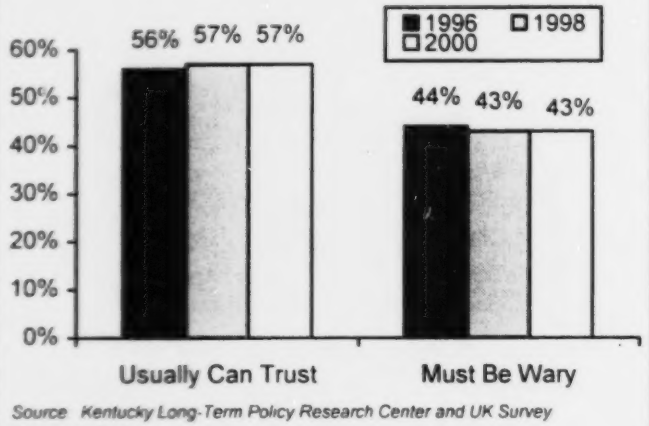
Kentuckians indicated that they always, usually, or sometimes feel safe in their communities (see Figure 28).[311] A considerable portion (39 percent, 41 percent and 38 percent, respectively) report always feeling safe. Historically low crime rates are part of the reason, but the sense of interdependence with and trust of neighbors also bolsters feelings of safety. Kentuckians report having a number of people, not counting family members, whom they can rely upon in time of need (see Figure 29). Fewer than 10 percent of respondents reported having no one to rely upon in time of need in all three years. Clearly, "neighborliness," a barometer of community or civic health, appears to be quite strong in Kentucky.

We also find that a large percentage of Kentuckians volunteer for community activities (see Figure 30). These same three surveys also asked Kentuckians if they had volunteered time for civic, community, charitable, nonprofit, or church-related activities during the previous 12 months. A majority of survey respondents in all years replied that they had participated in such activities. This majority increased from 56 percent in the 1996 poll to 60 percent in both the 1998 and 2000 polls. Nationally, the Census Bureau found that 48.8 percent of the population volunteered in 1995.

We also asked whether respondents had made donations to charitable organizations during the previous 12 months. In all three of these surveys approximately four fifths of Kentuckians indicated they had done so. The national average for charitable givers stood at 68.5 percent in 1995, according to the U.S. Census Bureau.

When Kentuckians were asked if they usually trust other people or are wary of them, more than 50 percent of respondents to the three surveys indicated that they are more likely to trust others (see Figure 31). These are substantially higher

FIGURE 31
Percent of Kentuckians Who Trust Others, 1996, 1998, and 2000



Source: Kentucky Long-Term Policy Research Center and UK Survey Research Center

[311] Estimates for 1996 and 1998 were taken from the Kentucky Long-Term Policy Research Center report, *Visioning Kentucky's Future: Measures and Milestones 2000*. Estimates for 2000 were obtained from questions by the Kentucky Long-Term Policy Research Center on the University of Kentucky Survey Research Center's 2000 Kentucky Spring Poll. The 2000 survey was conducted from May 18 to June 26, 2000. Households were selected using random-digit dialings, a procedure giving every residential telephone line in Kentucky an equal probability of being called. The sample includes 1,070 noninstitutionalized Kentuckians 18 years of age or older. The margin of error is slightly less than 3 percentage points at the 95 percent confidence level.

average trust levels than those found around the country. A 1994 survey by the National Opinion Research Center showed that only 35 percent of Americans say that "most people" can be trusted.

Thus, on a number of measures of our capacity for caring for one another and uniting with fellow members of our community in such efforts, we find that the Commonwealth indeed has a significant reservoir of strength. The challenge, given Putnam's larger findings, however, may be that of maintaining what we have and cultivating more as need rises in the coming years.

Conclusion

Population aging is a common phenomenon in areas that have experienced economic and social development to such an extent that medical advances have prolonged active life expectancies, and economic restructuring has promoted lower fertility rates. Gradually, society has become well aware of the many impacts of population aging, from the explosive growth of popular retirement areas to the heightened demand for health care and housing services and the tenuous state of Social Security.

Kentucky's population is aging, in terms of both absolute numbers of elders and their size relative to the whole population. Thus, it is safe to say that the Commonwealth will have more elders in the future who will require increasing levels of health care and social support.

Two reactions to population aging have been found to dominate. Both are somewhat analogous to individual aging. The first is fear. Just as some individuals fear the changes brought on by advancing age, society fears the changes caused by a growing number of elders. Individuals may modify lifestyles and behaviors or seek medical treatments to look and feel younger than they are. Societies may use economic incentives or disincentives either to influence fertility or somehow selectively regulate the movement of elders across borders, thereby lessening the perceived deleterious impact of an older population. Each is an attempt to control a process, and in each case it can be argued that they will do no more than postpone the inevitable.

The second reaction is acceptance of what promises to be a common experience among the industrialized nations of the world. With acceptance of what is, in this case, an inevitable demographic process over which we have very little if any control, comes recognition of the need to prepare for it, to manage the change it will most assuredly bring about. Ultimately, what's at stake is whether we become impoverished by what lies ahead or enriched by the capacity we discover within ourselves and our society.

POLICY OPTIONS FOR THE NEW CENTURY

Catching the Wave of the Economic Future

Regardless of current profitability reports from high-tech and Internet firms or whether the Nasdaq is rising or falling, the role of information technology in the future economy is virtually assured. It will almost certainly be a driving force in every sector. Thus, if we are to close the still considerable distance between here and where we want to be—a far more prosperous place—it will be necessary to do more than simply test the waters of the New or Digital Economy. Instead, we must help new information technology and Web-based enterprises set sail and make Kentucky a welcome destination for the firms that build hardware, design software, and use these revolutionary tools to create all manner of information products. What's more, we must help the traditional businesses and industries that are already here seize the extraordinary opportunities that information technology (IT) holds for them.

Indeed, IT could become the vehicle that enables Kentucky to make more than incremental gains against poverty, undereducation, and low wages. It is precisely these forces that are at the root of the persistent inequalities we discuss in this report. What's more, some of the deficits these inequalities foster—namely undereducation and underemployment—are often an attraction for mobile industries. While the next generation of Kentuckians may be poised for the e-future, the question of whether Kentucky is where they will want to be is still the business of today's generation.

For now, too much of our economy remains anchored to the past. We're still doing far too much heavy lifting in an economy that rewards intellectual prowess. If low-skill industries continue to move to the cheaper wages that beckon offshore or to other U.S. locales, as many of our recent industrial acquisitions have, and automation eliminates more jobs than it creates, manufacturing could become the state's Achilles heel, rather than its savior. Higher productivity rates and real output growth have moderated manufacturing sector job loss predictions, but manufacturers have been slow to tap the enormous potential that online communications offer. In short, the manufacturing sector alone is not likely to ferry our state into a new era of prosperity.

Unfortunately, we have too few e-businesses and, by most assessments, too little of the entrepreneurial energy or "critical mass" needed to foster more high-tech development. While the rural areas of Kentucky, as in the rest of the nation, often lack the aggregate demand needed to leverage telecommunications industry

investment, our state is well-positioned nationally in regard to its electronic infrastructure. And soon, very soon, wireless communications are expected to make many current concerns about infrastructure limitations superfluous. What we need and will continue to need is greater capacity to exploit the infrastructure—wired or wireless.

Fortunately, the Commonwealth's leadership has responded to the need to ready our state for the future. It has taken numerous steps to elevate the quality of education, instituting a long-term quest for excellence and successfully placing educational achievement in the state on an upward trajectory. Further, the Governor's Office and legislative leadership have moved to address some of the gaps in the state's entrepreneurial infrastructure with adoption of the Kentucky Innovation Act of 2000, based on the research and recommendations of the Kentucky Science and Technology Corporation. The Act funds efforts to build and promote networks of high-tech, research-oriented industries, helps existent manufacturers adapt to the New Economy, provides workforce training, places new emphasis on the recruitment of high-tech firms and jobs, and brings new attention to research and development. Additionally, the work of the Task Force on Information Technology has resulted in an important series of recommendations that should continue to be a focus of legislative interest and action. Finally, the Governor's Office has brought much-needed focus to the development of strategies for broader based engagement in the digital economy through the appointment of a Commissioner of the Office of the New Economy.

These steps are an important beginning that must be matched with innovative thinking at every level about how we can leverage more New Economy opportunities for citizens of the Commonwealth. We can begin to do so, first, by recognizing that the businesses and industries already located in the Commonwealth can achieve greater profitability and competitiveness and thus enable greater prosperity by tapping more of the potential information technology offers. The evidence available to us suggests they are not doing so. State government can help Kentucky firms of all sizes begin to gain a critical competitive edge from B2B and e-commerce by offering strong technical assistance and education and training programs that help build the knowledge and skills needed. At the same time, timely education and training programs will help empower new entrepreneurs who, in turn, can provide critical digital services.

Clearly, we also must play to our strengths as we attempt to gain a foothold in an economy that has already traveled farther than we could have possibly anticipated and at a pace unlike anything we have ever known. To do so, we must facilitate the business development opportunities university-based research offers and recognize and build on both clusters of related industries and centers of academic excellence—pharmacy, dentistry, agriculture, and medical research, to name a few—that would be attractive to information technology firms. In the process, we cannot lose sight of the importance of cultivating and enabling the entrepreneurial skills of our own citizens, which are considerable and largely untapped.

Generally, our approach to economic development also must become far more flexible, like the dynamic economy which is racing ahead of us. Over the course of the coming year, the Economic Development Partnership Board, the principal

architect of statewide economic development strategies, reportedly plans to revise a dated strategic economic development plan for the state and begin incorporating new goals and new strategies for achieving the rising standard of living we have vigorously pursued in recent years. The effort is much needed, but a year is far too long a time to take to develop a more responsive posture to an economy that is moving at "Net" speed.

Rather than prescribed programmatic responses, such as those that have helped policymakers lure thousands of traditional jobs, often to underdeveloped rural areas of the state, the New Economy demands flexibility. The dynamic business environment and the enormous success it is fostering will not wait for a plan or an incentive program with rigid parameters. Instead, state and local economic development professionals need immediate access to incentive programs that recognize and accommodate the unique needs of New Economy firms. At present all of our economic development incentive programs, with the notable exception of the Kentucky Jobs Development Act, are geared to manufacturing. And even this incentive program is flawed by some estimations, in that it compels local governments to forego local taxation, a requirement that, not surprisingly, engenders pressures for commensurate treatment from already established local businesses. Thus, its overall impact on often financially strapped local governments may not be what policymakers sought.

While they tend to be small firms that prefer unusual space and demand sophisticated electronic infrastructure, the needs of New Economy firms will differ greatly. Therefore, we must be prepared to provide—on a dime—comprehensive information, assess the potential of a business location or development, and provide customized packages of incentives. Considerable risk will be involved in such incentives, but it will likely be no greater and perhaps significantly less than programs that extend generous incentives to already mobile industries. In the past, they have too often chosen Kentucky largely because it offers low business costs, particularly low labor costs. The returns to citizens of the Commonwealth, in turn, have too often been lower-than-average wages, lower incomes, and a lower standard of living, outcomes that run contrary to our larger economic development goal of a rising standard of living.

Importantly, House Bill 572 mandates the provision of funding in the 2000-2002 budget to inventory all relevant statutes, regulations and policies that may be obstacles to high-tech business development in Kentucky. It also creates the Office of the Commissioner of the New Economy, a separate organizational unit that will be exclusively devoted to assisting small high-tech and information technology related businesses in Kentucky. Further, this key legislation mandates that the Governor and the Commissioner of the New Economy, in collaboration with the Kentucky Innovation Commission, develop a New Economy Strategic Plan, which will focus on recruiting and growing research and development centers and innovative high-tech firms. The study and the plan that emerges from it will be used to recommend legislation for the 2002 regular session to modify state statutes to comport with the needs of the emerging economy.

Indeed, a far more dynamic and flexible approach to development is needed at every level, one that the Commissioner of the Office of the New Economy can

immediately begin to champion. By advancing a new development mindset statewide and quickly fashioning the tools needed to give life to the economy it envisions, we can begin to capture some of the incredible energy of the Digital Economy and reap more of its rewards for the people of the Commonwealth.

Addressing Persistent Inequities

While globalization and technological change carry some undesirable consequences, policies that encourage these trends have benefited society as a whole. Increased competition has helped create higher quality goods and services at lower prices. Therefore, discontinuation of policies that promote these trends is undesirable from an efficiency standpoint and thus highly improbable. However, as we have reported across the years, these forces result in clear winners and losers, indicating a poor distribution of these expanded societal benefits. This is especially true for Kentucky. The economic boom of the 1990s has served our citizens well through income increases at all levels, but it has not been great enough to compensate for the deterioration of income in the 1980s and restore the 75-25 income ratio to its pre-1980s level. And gaps in income inevitably result in other gaps, such as those we have discussed, gaps that are likely to impose significant long-term costs.

Income Inequality. Over time, Kentucky's continued emphasis on education excellence and quality at all levels will almost certainly help narrow the income divide and temper its consequences. The data show that the economic returns to higher education have been increasing and will likely continue to do so, as the rapid pace of globalization and technological change show little sign of ebbing. Policies that promote enrollment, persistence, and graduation at all levels will likely pay off in a reduction of income inequality and benefits in many other areas important to the citizens of Kentucky.

Given the growing advantage that college-educated workers have over high-school graduates, policies designed to encourage educational attainment at the postsecondary level could help alleviate income inequality. Higher-skilled workers will benefit from such programs through higher wages based on increased productivity, while low-skill wages rise as a result of a smaller supply of low-skill workers. Welfare economist Amartya Sen, a recent Nobel laureate, once noted, "The economies that have been most successful in the recent development of world trade ... have all been very oriented towards education."[312] Fortunately, the Council on Postsecondary Education, created in 1997, has already begun work on formulating and enacting strategic plans for creating a high-quality postsecondary education network. Additionally, we now have a decade of experience behind us in elementary and secondary education reform. The reform process, however, is a long-term one. Though a reformed education system at every level and a far more

[312] I.T. Institute of Finance, "Tribute to Amartya Sen, 1998 Nobel Prize Winner in Economics," (1998) 21 June 2000 <www.qinfo.com/finance/amartya-sen-nobel.html>.

educated citizenry will not be realized quickly, sustained commitment to these critical long-term goals will be key.

A variety of near-term policy options are available to both state and federal policymakers concerned with narrowing the gap between the rich and poor. These include, but are not limited to, a more inclusive health care system, higher unemployment insurance payments, expanded federal or state-level earned income tax credits, larger subsidies for child care and housing, and tax cuts for low-income workers to increase their take-home pay and reduce the divide.[113] Table 14 presents the results of a recent RAND study which compiled all the available policy options and categorized each one by its effect.

TABLE 14
A Menu of Policy Options to Address Income Inequality

	Policy Goal			Initial Effect	
Options	**Narrow the Gap**	**Raise the Floor for the Poor**	**Alleviate Shocks**	**Short Run vs. Long Run**	**Incomes vs. Wages**
FISCAL POLICIES					
Tax progressivity		■		Short run	Incomes
Earned income tax credit		■		Short run	Incomes
Transfer payments		■		Short run	Incomes
MACROECONOMIC POLICIES					
Economic growth	■			Short run	Incomes
LABOR MARKET POLICIES					
Union strength				Long run	Wages
Minimum wage		■		Short run	Wages
Demand for low-skilled workers		■		Long run	Wages
Portable benefits			■	Short run	Wages
HUMAN CAPITAL INVESTMENTS					
Education		■	■	Long run	Wages
Training/retraining			■	Long run	Wages
Early childhood investments		■		Long run	Wages
FAMILY DECISIONMAKING					
Child support payments			■	Short run	Incomes

NOTE: □= weaker role; ■= stronger role; ■= uncertain role
Source: "Growing Economic Disparity in the U.S.," RAND, 1998

Closing the Digital Divide. At its 2000 conference, "TelecomSouth II: One South, Digitally Divided," the Southern Growth Policies Board focused attention on the digital divide. A report prepared for the conference, *Creating the CyberSouth,* outlines a number of issues, many of which are pertinent to Kentucky, that need to be addressed if we are to close the divide.[114] These issues include, but are not limited to: those who need the access most are least likely to have it; income largely determines IT (Information Technology) access; and information and computer illiteracy keep many from reaping benefits from IT.

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[113] Uchitelle, "Making Sense .. " 3.

[114] Southern Growth Policies Board, *Creating the CyberSouth* Sept. 2000, 28 Nov. 2000 <http://www.southern.org/cybersouth/cybersouth.PDF>.

With many of these same underlying issues in mind, the Task Force on Information Technology, which was created by the Kentucky General Assembly in 1998, proposed in its final (October 1999) report several recommendations designed to help Kentucky businesses and individuals access and utilize the technology.[115] The Task Force recommendations include, but are not limited to, the following:

- ⇨ That the state, in order to stimulate citizens' ownership of home computers, grant a one-time individual tax credit for the purchase of a home computer.
- ⇨ That state government partner with such local resources as school districts and local governments to promote awareness of how information technology can make their lives easier and to train citizens to use the technology, especially the Internet.
- ⇨ That state government promote an advanced communications infrastructure in the state that would provide affordable high-speed Internet access to all regions of the state.

It is likely that the newly created Office of the New Economy can provide the energy to move many of these ideas forward. Nonetheless, if we are to bridge the digital divide, movement will have to take place on multiple fronts and involve many players. For example, a recent report by the U.S. Department of Commerce's National Telecommunications and Information Administration highlights the importance of the public library system. The report states that national "data show that schools, libraries, and other public access points continue to serve those groups that do not have access at home. For example, certain groups, such as the unemployed, Blacks, and Asian Americans and Pacific Islanders, are more likely to use public libraries to access the Internet."[116] For Kentucky to realize the New Economy's promise of prosperity it will be necessary to narrow and ultimately close the digital divide.

Remedying Gaps in Health Care. Our 1999 report, *What Next for Kentucky Health Care?*, offered a series of policy recommendations designed to improve access to health care as well as health outcomes in the state. Underlying these recommendations was the recognition that it is in the long-term interest of the Commonwealth to meet the needs of those individuals who are not included in our current system of health care and to fashion health care reform initiatives with these goals in mind.[117]

These policy options are as follows:

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[115] *Report on House Concurrent Resolution 113*, Task Force on Information Technology, Legislative Research Commission Research memorandum No. 484, 1 Oct. 1999.

[116] National Telecommunications and Information Administration, "Falling Through the Net ..."

[117] House Bill 517, which was enacted by the 2000 General Assembly, created Kentucky Access, a high-risk health insurance pool designed to help individuals whose chronic illnesses subject them to high insurance premiums. By providing assistance to individuals with high-cost medical conditions, architects of the legislation believe all Kentuckians will benefit as some of the cost burden borne by healthier Kentuckians is removed. The program is intended to help stabilize the individual market, hold the line on rising premiums, and attract insurance companies back to Kentucky.

- ⇨ *Provide the tools and organizations for informed decisionmaking.* Create or designate a reputable, objective body with access to reliable data *or* the resources and authority to collect and analyze data to make policy recommendations to the General Assembly.
- ⇨ *Recognize the limitations of insurance reform.* Efforts to enable access to health care through reform of the state's individual and small group health insurance market have had minimal impact on expanding access to health insurance. It is important to continue to learn more about the insurance market and to make data-driven decisions to refine our regulatory framework, but insurance reform alone will not expand access to the working poor families and individuals who comprise most of the uninsured.
- ⇨ *Identify and expand resources dedicated to health care.* Additional funds will be needed to expand access to health care. An essential counterpart to expanding the resources we dedicate to health care is prudent purchasing. Finally, resources should be dedicated to the work of identifying existing sources of care and creating accessible networks for the uninsured.
- ⇨ *Enroll those who are currently Medicaid eligible and expand eligibility.* The model state initiatives we profiled in our 1999 report achieved lower uninsured rates principally by forthrightly addressing the need for revenue and expanding Medicaid eligibility. The encouraging success of the Kentucky Children's Health Insurance Program (KCHIP) in stimulating the enrollment of Medicaid-eligible children, extending health insurance to some 65,000 children in the state, has shown that we can indeed make programs work for the individuals whom they were designed to serve. Kentucky is one of only 10 states in the nation to provide the level of funding for health benefits budgeted by the federal program during the three-year period allowed for disbursement of the initial appropriation of CHIP funds. The Health Care Financing Administration has significantly relaxed the rules for expanding Medicaid to cover the parents of KCHIP-eligible children, and the success of KCHIP suggests that this strategy could bring many more Kentuckians under Medicaid coverage were we to commit the necessary funds.
- ⇨ *Contain costs.* As we consider expansions of Medicaid, however, it will be necessary to continue to adopt cost controls that have traditionally been associated with managed care, which has had little success outside the greater Louisville area. In the absence of cost controls or managed care approaches to the delivery of Medicaid services, however, our future problem could be one of sustaining the level of benefits we now have, rather than expanding them.
- ⇨ *Focus on population health.* The health care leaders interviewed for our report strongly advocated a focus on population-based health initiatives to improve the poor overall health status of Kentuckians. To that end, policy options include investment in the core public health roles that health departments have traditionally filled and the development of a concerted,

comprehensive effort that unites the public, private and nonprofit sectors in visible, well-publicized efforts to change health behaviors.

Invest in People. The four most important factors that will determine Kentucky's success in meeting the challenges for the next century are: early childhood *education*, K-12 *education*, postsecondary *education*, and adult *education*. The Governor, General Assembly, education officials, and many concerned citizens have focused much of their attention in recent years on the constellation of issues surrounding lifelong education. This is evidenced by the Governor's Early Childhood Task Force[118] (1999), the Kentucky Education Reform Act (1990), the Task Force on Teacher Quality[119] (1999), the Task Force on Adult Education[120] (1999), and the Kentucky Postsecondary Education Improvement Act (1997).

These working groups have offered a number of recommendations, and many have been incorporated into legislation and adopted by the General Assembly. Nevertheless, while these initiatives represent important steps in the right direction, policymakers will be challenged in the future to make continuous improvements in Kentucky's system of education and to develop policies for bridging the "opportunity gap."[321]

To bridge the opportunity gap, education will have to become more affordable and accessible. With respect to postsecondary education, our survey of high school students shows that these students will depend heavily on their parents *and* on financial aid to pay for their education (see Table 15). Programs such as the Kentucky Education Savings Plan Trust and the Commonwealth Postsecondary Prepaid Tuition Trust Fund will help some parents pay for their children's education. Moreover, since students have also indicated a relatively high dependence upon financial aid, policymakers could consider additional funding for both need-based financial aid and merit-based scholarships (like KEES). While these are worthwhile and necessary programs, it is not sufficient simply to have the programs in place—parents and students need to be familiar with them. Unfortunately, there appears to be a general lack of familiarity with the many financial aid programs available to Kentucky's students (see Table 16). To help close the opportunity gap in education, these kinds of programs will require continued political and financial support as well as widespread publicity.

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[118] The final report of the Governor's Early Childhood Task Force, *Kids Now*, is available online at: http://www.state.ky.us/agencies/gov/ecdrpt.pdf.

[119] *Teacher Quality Issues in Kentucky*, Research Report No. 297, (Frankfort: Legislative Research Commission, 2000).

[120] *Adult Education and Literacy in Kentucky*, Research Report No. 296 (Frankfort: Legislative Research Commission, 2000).

[121] Refer to page 67.

TABLE 15

Approximately how much financial help with the cost of college do you expect to get each year from the following sources?
(percentage of respondents)

	None	$1-$499	$500-$1,499	$1,500-$3,000	Over $3,000
Full-time job	66	6	12	9	8
Part-time job	23	26	31	14	6
My own savings	33	28	24	9	6
Parents, other relatives or friends	9	13	21	16	41
Financial aid (student loans, grants, scholarships)	12	6	17	22	43

Source: Kentucky High School Survey, 2000
Note: The results are based on a sample of between 953 and 1,002. Total might not add to 100 due to rounding.

TABLE 16

How familiar are you with the following state and federal financial aid tools that assist students with financing for a university, community or technical college?
(percentage of respondents)

	Not at All Familiar → Very Familiar				
	1	2	3	4	5
Pell Grants	70	13	11	4	3
Supplemental Education Opportunity Grants	64	20	11	3	2
Work Study Programs	32	25	22	13	8
Perkins Loan Program	74	14	8	2	2
Stafford Loan	73	14	8	3	3
PLUS Loan	78	13	6	2	1
Federal Student Aid Information Center	47	20	18	8	6
Kentucky Educational Excellence Scholarship (KEES)	30	13	17	14	26
College Access Program (CAP)	61	21	10	5	4
Kentucky Tuition Grant (KTG)	58	19	14	6	4
Free Application for Federal Student Aid (FAFSA)	51	15	13	10	11
Kentucky Higher Education Assistance Authority (KHEAA)	38	18	17	14	13

Source: Kentucky High School Survey, 2000
Note: The results are based on a sample of approximately 1,060. Total might not add to 100 due to rounding.

The Kentucky Virtual University, Kentucky Virtual Library, and Kentucky Virtual High School will help enable and facilitate increased access to the state's education system. The interest in and utilization of these programs appears to be relatively strong. For example, when asked *How interested would you be in using the Internet to take college classes in the next three years?*, 29 percent of the respondents to the High School Survey said "very interested," 49 percent replied "somewhat interested," and 22 percent said "not interested." And "digitally delivered" education will become more common as an increasing number of Kentuckians gain Internet access.

The success of the Commonwealth in meeting the challenges of the next century will depend on how well we address the opportunity gap. Having a large population of high school dropouts, adults who cannot read, and disadvantaged

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children can and will have widespread societal consequences. Indeed, according to Dr. Gordon Davies, President of the Council on Postsecondary Education, "If we try to move ... into a New Economy with 40 percent of the workforce having difficulties with fundamental literacy, it's like going sailing with your anchor down. You will sail in a circle around your anchor."[122]

Managing the Coming Demographic Challenge

To better manage the change ahead, we can begin now with efforts to keep older citizens engaged longer, provide flexible opportunities to enable more to remain in the labor force, encourage their involvement in civic affairs, and tap their considerable wealth of experience and knowledge for the greater good of all. In doing so, we will likely improve the quality of the lives of older citizens by reducing isolation and, at the same time, enrich society.

Second, we can continue the vigorous pursuit of higher quality government, thus maximizing the resources available to us in future years. As the National Governors' Association (NGA) has recommended, we can continue to advance efforts to forge public-private partnerships as a mechanism for complementing public resources and achieving common purposes. In its report, "State Strategies for the New Economy," NGA observes, "Many of the most difficult problems confronting society—reducing teenage pregnancy, increasing adult literacy, promoting lifelong learning, expanding economic opportunities to disadvantaged populations, reducing substance abuse and violence by youth and adults—are beyond the capacity of state and local governments to solve by themselves. They require comprehensive responses by nonprofit organizations, the faith community, businesses, unions, and other social institutions and their leaders. Programs financed and operated solely through the public sector often achieve only modest success given the magnitude and complexity of these problems."[123]

Indeed, government alone cannot meet the needs of our society. Thus, partnerships are key. It is critically important that the public sector continue to pursue ways of working collaboratively with the nonprofit and the private sectors to achieve shared goals. In Kentucky, the Children's Health Insurance Program has demonstrated the remarkable potential for such partnerships. Likewise, partnerships that unite nonprofits in joint efforts that maximize their resources for the greater good will be important. To do so, it will be necessary for nonprofits to set aside competition for public and foundation dollars and work collaboratively to maximize resources and extend their reaches. Across every sector, the adoption of efficient, results-oriented organizational strategies will determine the success of our attempts to meet an immense challenge that may exceed our traditional resources.

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[122] "Challenges for the Next Century," Kentucky Long-Term Policy Research Center annual conference, 14 Nov. 2000.

[123] National Governors' Association, "State Strategies for the New Economy," (Washington, D.C.: Author, 2000).

Strengthening Kentucky's Social Capital

The data presented in the previous chapter suggest that Kentucky may have a large stock of social capital. The numerous projects listed in the Center's 1998 study on the subject, *Civil Society in Kentucky,* further make the case that civil society is alive and well in Kentucky.[124] Yet few would disagree that Kentuckians would benefit from making civil society even stronger. This section examines ways to use leadership development training and funding as points of leverage for strengthening Kentucky's civil society.

Before we begin our discussion of policy options based on these factors, we should note that one policy option is to do nothing. If civil society is alive and well in Kentucky, then it might not need any help. If the most successful civic projects are ones that spontaneously grow from the desires and needs of individuals within a community, then perhaps there is little government or even the nonprofit sector should do to institutionalize programs or policies designed to strengthen civil society. Perhaps such programs would hinder more than help. No doubt some people hold this view, and it does have some merit. Others, however, feel that the public and nonprofit sectors can and should play a more active role in civil society. For them, we offer the following policy options.

Leadership Development. Kentucky's civil society would likely be enhanced if the state's leadership development programs were to include more nontraditional leaders. People in the state who receive leadership training are not representative of the general population.[125] This is not to say that the programs are purposely exclusive. But the considerable cost of some programs and their class schedule and structure may make it difficult for people with lower incomes and less flexible schedules to participate. The Central Kentucky Community Leadership Program (CKCLP) (based in Lexington) is one example of a leadership training program that strives to include nontraditional leaders. The independent citizens and organizational representatives who helped start the CKCLP designed recruitment and application processes intended to "invite participation from persons of different walks of life, racial, and ethnic backgrounds, socioeconomic circumstances, ages and civic experiences."

Broadening the base of community leadership deepens the pool of talent from which local organizations can draw. Cathy Curtis of Operation PRIDE in Bowling Green says her organization benefits tremendously by looking outside normal leadership circles for talent. Operation PRIDE, which is a nonprofit organization dedicated to preserving and improving the city's riverfront and surrounding greenbelts, draws extensively on the ideas and abilities of people Curtis characterizes as nontraditional leaders. "Nontraditional leaders," she says, "have nontraditional ideas."

Create a Social Capital Fund. Discussions of business formation in Kentucky frequently turn to the topic of a state venture capital fund, which could finance Kentucky's business entrepreneurs. Similarly, officials from government and

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[124] Refer to Appendix A of Peter Schirmer, Ryan Atkinson, Jeff Carroll and Michal Smith-Mello, *Civil Society in Kentucky* (Frankfort: Kentucky Long-Term Policy Research Center, 1998) 37.

[125] One third of our sample of Kentuckians who have gone through leadership development training have annual household incomes over $120,000.

other organizations might consider a social capital fund, which could help finance civic projects and social entrepreneurs. We found two possible models, one from Seattle, Washington, and the other from the Brushy Fork Institute in Berea, Kentucky.

Seattle's Neighborhood Matching Fund Program provides "over $1 million each year to Seattle neighborhood groups and organizations for a broad array of neighborhood-initiated improvement, organizing or planning projects." The Brushy Fork Institute's Teamwork for Tomorrow Program provided "mini-grants" of up to $2,000 to organizations within Appalachian Regional Commission counties. Representatives from organizations attended a series of workshops to learn about proposal writing, tactical and strategic planning, and fundraising. They were taught how to write a mission statement, run meetings, and set agendas. Representatives from organizations that won mini-grants were invited back for more intensive, three-day workshops that focused on proposal writing and planning. Recipient organizations were required to have a bank account and an employer identification number so the deposits would be in the organization's name. Perhaps most important, the mini-grants had to be matched by funds raised within the communities. In 1997, 24 organizations received a total of $25,000.

Conclusion

The challenges before us as we enter the 21st century are immense and seemingly formidable. In addition to closing the gaps that have historically been obstacles to broad prosperity in our state, we must gain our footing in a new, fast-paced, and very demanding economy. At the same time, we must anticipate and prepare to meet the needs of an aging population that will exert new pressure on federal and state budgets, as elders tap existent programs and services in unprecedented numbers and find needs for services we have yet to anticipate.

We have taken important, even visionary steps to ready our state for what lies ahead and to enable it to build the capacity needed to match and even exceed the achievements of more prosperous states. But government alone cannot meet the challenges of the coming years. New partnerships between the public, private and nonprofit sectors of our state and nation are essential if we are to expand our capacity to serve. The power of collaborative approaches to solving problems has been demonstrated time and again throughout our nation's history. Indeed, they are the foundation of much of our nation's greatness. The challenges of this new century compel a return to this enduring foundation, as we strive to meet the needs of today while sustaining the pursuit of a brighter future for the Commonwealth.

Appendix A
Income Inequality

This analysis uses data from the March Supplement of the Current Population Survey (CPS) compiled by Unicon Research Corporation. The CPS is a monthly survey conducted by the U.S. Bureau of the Census to obtain data used in estimating the official unemployment statistics for the U.S. government. Each March the core labor questions are supplemented with questions on income, poverty and geographic mobility. The sample is comprised of approximately 62,500 housing units from 792 geographic regions.[126] People are asked questions about amounts and sources of income from the previous year (i.e., the income data from the March 1999 survey refer to income from 1998).

Definition of Income. The survey provides information on pre-tax cash income from a variety of sources. These sources include (1) money wages or salary; (2) net income from nonfarm self-employment; (3) net income from farm self-employment; (4) Social Security or railroad retirement; (5) Supplemental Security Income; (6) public assistance or welfare payments; (7) interest (on savings or bonds); (8) dividends, income from estates or trusts, or net rental income; (9) veterans' payment or unemployment and workmen's compensation; (10) private pensions or government employee pensions; and (11) alimony or child support, regular contributions from persons not living in the household and other periodic income. The data on income do not include post-tax income, income from capital gains or such non-cash benefits as food stamps, school lunches or housing subsidies. In addition, the income measures used in this report have been converted to real 1998 dollars using the CPI-UX1 as the appropriate price deflator.

Definition of Family Income. The level of analysis is the family. Rather than use census-defined family income, this report sums individual incomes for persons included in the same family. Persons are grouped together as one family if they are related and living in the same housing unit. For instance, a married couple and relatives with whom they live, such as an elderly mother or a grown child with a spouse and child, are counted as one family. The incomes of each of these members would be included in the summation of that family's income. Unrelated individuals living together count as separate families. Examples of this situation are an unmarried couple living together each with their children from previous relationships, and three single, unrelated individuals living together as roommates,

[126] Sample sizes have changed since the survey's inception in 1940 to accommodate shifting population patterns and population growth. The monthly sample consists of approximately 60,000 housing units, but the March Supplement includes an additional 2,500 housing units that have at least one resident of Hispanic origin. For a detailed discussion of the changes that have taken place during this period see U.S. Census Bureau, *Current Population Survey: Design and Methodology*, Technical Paper 63, March 2000. Electronic version available online at:< www.bls.census.gov/cps/tp/tp63.htm>.

which would be counted as two and three families, respectively. The only case in which an unrelated individual is included in a family is that of a child under the age of 18 living with an unrelated family or adult individual.

Although this definition allows for families of various sizes, the income measures have been adjusted to represent a family of four.[127] This is done using poverty-line estimates for the various family sizes. Total family income is divided by the poverty line for that family size and then multiplied by the poverty line for a family of four. This family-size correction reflects economies of scale in consumption enjoyed by people who live in larger families. Therefore families of different sizes with the same income will have different levels of adjusted family income. For example, the US poverty scales imply that a family of four requires about twice, rather than four times, the income of a single individual to be equally well off.

Treatment of Top-coded Variables. Total personal income is made up of income from earnings and from non-earned sources. In several years these sources of income would be top-coded to protect the privacy of survey respondents and help ensure anonymity. For instance, in 1977 "earnings from wage and salary" was top-coded at $50,000. If a respondent reported a value for this category that was equal to or exceeded $50,000, the reported value would be $50,000. Top-codes have changed over time. Increasing the magnitude of the top-code can increase measured income inequality even when the true underlying distribution of income does not change. Other complications arise from the simple fact that top-coding can mask changes in the measure of income inequality caused by the extremes of the income distribution.[128]

To limit biases in measures of inequality due to changing top codes, the percentage top-coded was standardized across every year. Using total personal income, a person's income is counted as top-coded if it exceeds the top reported value for "earnings from wage and salary." The top-code value for "earnings from wage and salary" was $50,000 from 1976 to 1981. It changed to $75,000 from 1982 to 1984, $99,999 from 1985 to 1995 and $150,000 from 1996 to 1999. All income values greater than these levels for the appropriate years were counted as top-coded. The percentage of incomes top-coded using this method was calculated for each year of the sample. To ensure a consistent distribution of top-coded incomes for the 20-year period, the highest calculated percentages, which were 1.4 percent at the state level and 1.7 percent for the United States, were used to determine the proportion of incomes to be top-coded in every year. Therefore, the 98.6 income percentile for Kentucky and the 98.3 income percentile for the United States for each year were used as the "cutoff" incomes for that year and all incomes greater than those values were set equal to those values at the respective

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[127] Other studies that use similar family-size adjustments are Lynn A. Karoly, "Anatomy of the U.S. Income Distribution: Two Decades of Change," *Oxford Review of Economic Policy* 12.1 (1998): 77-96; Gary Burtless, "Effects of Growing Wage Disparities and Changing Family Composition on the U.S. Income Distribution," Working Paper No. 4, The Brookings Institution, Washington, D.C. (1999).

[128] Since the sum of individual incomes was used to create a new family income, the census-defined family income top-code values were not used.

levels of analysis. These maximum amounts of top-coded incomes both occurred in 1995.

Percentile and Ratio Estimation. Trends in income distribution were analyzed using percentiles and ratios. Incomes at the 10th, 25th, 50th, 75th and 90th percentiles were estimated. The 75-25 ratio demonstrated the relative difference between 75th percentile income and 25th percentile income by dividing the 75th percentile income by the 25th percentile income. If this ratio increased, this would demonstrate an increase in the income gap between these two percentile levels, while a decline would show a narrowing of the gap. A ratio of 3.0 showed that income at the 75th percentile was three times that of income at the 25th percentile for that year. To identify more clearly the long-term trend, three-year moving averages of these ratios were used at the state level to smooth out any year-to-year variations resulting primarily from small sample size. Finally, the percentage change in incomes between the beginning and end of the period were analyzed for all five percentile levels.

Appendix B

Computer and Network Usage

Since both dependent variables, access to a computer at home and utilization of network services, are binary (yes or no), we use a multivariate probit model to estimate the effect of the predictor variables of income, education, race, gender, location, and age.

Income. The CPS does not report the precise household family income. Rather, it is reported in 14 broad categories. We divided these 14 categories into quartiles for the analysis: the bottom quartile ($0-$19,999) includes 26.8 percent of the sample; the second quartile ($20,000-$34,999) includes 23 percent; the third quartile ($35,000-$59,999) includes 27 percent; and the fourth quartile ($60,000 and over) includes 23.2 percent. In our analysis the first quartile is omitted from the model and is the reference group. We also included a variable in the model, MISINC, if the income data are missing for a household.

Education. Educational attainment is collected for individuals 15 years and older. There are 16 categories, which range from "less than 1st grade" to doctorate. Given this categorization scheme, references to persons with a high school degree or equivalent does not mean we are referring to all persons with a high school degree or equivalent level of educational attainment *and higher*. These references are made about those people who have a high school degree or equivalent *only*. This holds true for all levels of education used in this analysis, including a bachelor's degree.

Race and Ethnicity. We use five variables to test the effect of race and ethnicity. They are a series of dichotomous variables: non-Hispanic Whites, non-Hispanic Blacks, Hispanics, Asians, and Native Americans. The variable "white" is left out of the model and is therefore the reference group.

Age. This variable is also modeled as a series of dichotomous variables: 0 to 19, 20 to 39, 40 to 59, and 60 and over. The reference group in the model is under 19 years old.

Gender. This variable is equal to 1 for males and 0 for females.

Location of Residence. This is a dichotomous variable indicating whether the residence is in a metropolitan area. The variable (URBAN) is set to 1 if metropolitan and 0 if nonmetropolian.

The probit coefficients and standard errors[329] for the two models are presented in Table B.1. Both models have excellent predictive power. If we hold all variables at their mean and calculate a predicted probability for the "average" Kentuckian, the computer access model predicts a probability of .437 and the network services model predicts a value of .369. These percentages are virtually the same as the actual percentages of .432 (computer access) and .368 (network services).

We calculate the "net" percentages by holding all variables at their mean values and changing only the variable of interest. So, to estimate the effect of race, we hold all variables constant at their mean except non-Hispanic Blacks, which we assign the value of 1. The predicted probability or "net" percentage is the estimated effect of this one factor while holding all other factors constant.

TABLE B.1
Probit Estimates

Variable	Home Computer	Network Services
Intercept	-5.553 ***	-7.546 ***
	(0.657)	(0.713)
Second income quartile	0.046	0.484 ***
	(0.130)	(0.138)
Third income quartile	1.047 ***	0.912 ***
	(0.122)	(0.132)
Top income quartile	1.210 ***	1.008 ***
	(0.136)	(0.142)
Income not reported	0.166	0.408 **
	(0.125)	(0.135)
Educational attainment	0.123 ***	0.169 ***
	(0.017)	(0.018)
Hispanic	0.847	-0.839
	(0.743)	(0.598)
Non-Hispanic Black	-0.530 **	-0.354 **
	(0.168)	(0.163)
Native American	5.894	6.130
	(4413.2)	(4479.5)
Asian	-0.482	-0.190
	(0.540)	(0.540)
Age 0-19	0.626 ***	0.856 ***
	(0.144)	(0.144)
Age 40-59	-0.068	-0.220 **
	(0.088)	(0.088)
Age 60 and over	-0.648 ***	-0.804 ***
	(0.121)	(0.130)
Gender	-0.035	0.048
	(0.076)	(0.076)
Metropolitan	0.229 **	-0.002
	(0.077)	(0.078)

Significance: ** = 1 percent; *** = 0.1 percent.
Note: Standard errors are shown in parentheses.

[329] The analyses were done using individual weights that approximately equal the inverse of the probability of being in the sample and normalized to add up to the sample size. This produces the correct standard errors.

Table B.2 contains the estimated means ("gross" percentages) and the 95 percent confidence intervals for access to a computer at home and utilization of network services. Refer to Table 4, "Estimated Gross and Net Percentages of Kentuckians Who Have Access to a Home Computer and Use Network Services, 1998."

TABLE B.2
Estimated Means (Gross Percentages) and
95 Percent Confidence Intervals of Kentuckians Who Have
Access to a Home Computer and Use Network Services, 1998

	Home Computer			Network		
Household Income	**Mean**	**Lower**	**Upper**	**Mean**	**Lower**	**Upper**
Bottom quartile	16.3	12.5	20.1	14.3	10.6	18.0
Second quartile	26.8	21.9	31.8	29.9	24.7	35.3
Third quartile	66.4	61.6	71.3	49.0	43.8	54.2
Top quartile	76.8	72.1	81.5	64.3	58.9	69.7
Education						
HS diploma or GED	36.4	31.9	40.9	25.7	21.6	29.7
Bachelor's degree	65.7	57.6	73.7	62.8	54.6	70.9
Residence						
Non-Metro	36.9	33.7	39.9	35.2	32.1	38.4
Metro	50.9	47.3	54.6	38.8	35.2	42.3
Gender						
Female	42.2	38.8	45.5	34.9	31.6	38.1
Male	44.3	40.9	47.7	38.8	35.4	42.3
Age category						
3 to 19	53.5	49.0	57.9	47.7	42.9	52.3
20 to 39	47.0	42.3	51.7	42.7	38.0	47.3
40 to 59	43.8	39.2	48.3	35.3	30.9	39.7
60 and over	15.9	11.5	20.4	10.7	6.9	14.4
Race						
White (non-Hispanic)	44.4	41.9	46.9	37.8	35.4	40.2
Black (non-Hispanic)	22.2	13.3	31.3	23.0	13.6	32.3

Appendix C

High School Survey: Background Information and Confidence Intervals for Selected Variables

In February and March of 2000 the Division of Driver Licensing generated a list of randomly selected 16- and 17-year-old Kentuckians which included 1,500 16-year-olds and 1,500 17-year-olds in the sample. The University of Kentucky Survey Research Center administered the survey. The 4-page, 39-question survey was mailed to these 3,000 individuals June 2-8, 2000. The survey was closed on August 29, 2000, with 1,088 total completions included in the data. Among responses, 85 were considered ineligible, and 1,827 respondents did not answer the survey. The response rate was 37.3 percent (1,088 divided by 2,915). Table C.1 shows some sample characteristics.

TABLE C.1
Kentucky High School Students, Sample Characteristics

	Variable	Frequency
AGE	15	1
	16	517
	17	551
	18	11
	Frequency Missing	8
YEAR OF HIGH SCHOOL	Freshman – 9th Grade	6
	Sophomore – 10th Grade	93
	Junior – 11th Grade	812
	Senior – 12th Grade	161
	Was not in school on 4/1/00	13
	Frequency Missing	3
GENDER	Female	616
	Male	469
	Frequency Missing	3
RACE	American Indian/Alaskan Native	15
	Asian	10
	Black, African-American	22
	Hispanic, Latino	11
	White	1028
	Other	1
	Frequency Missing	1
TOTAL HOUSEHOLD INCOME, 1999	Less than $20,000	108
	$20,000 to $40,000	232
	$40,001 to $70,000	361
	More than $70,000	293
	Frequency Missing	94
GPA	1.50 to 2.50	70
	2.51 to 3.00	215
	3.01 to 3.50	305
	3.51 to 4.30	425
	Frequency Missing	73

TABLE C.2
Estimated Percentage of 16- and 17-year-old Kentucky High School Students Who Have Taken College Preparatory Classes, by Family Household Income

	Variable	N	Mean	Standard Error of Mean	Lower 95% Confidence Level for Mean	Upper 95% Confidence Level for Mean
Less than $20,000	Algebra II	107	76%	0.0417	67%	84%
	Chemistry I, Physics I	107	73%	0.0432	64%	81%
	Foreign Language	107	51%	0.0485	42%	61%
	AP Courses	104	35%	0.0469	25%	44%
$20,000 to $40,000	Algebra II	230	83%	0.0250	78%	88%
	Chemistry I, Physics I	231	77%	0.0279	71%	82%
	Foreign Language	230	59%	0.0325	53%	66%
	AP Courses	229	31%	0.0307	25%	37%
$40,001 to $70,000	Algebra II	361	90%	0.0160	87%	93%
	Chemistry I, Physics I	360	84%	0.0193	80%	88%
	Foreign Language	358	77%	0.0221	73%	82%
	AP Courses	359	44%	0.0262	39%	49%
Over $70,000	Algebra II	293	92%	0.0154	89%	96%
	Chemistry I, Physics I	293	91%	0.0163	88%	95%
	Foreign Language	291	89%	0.0181	86%	93%
	AP Courses	290	47%	0.0294	41%	53%

Appendix D

Factors Affecting the Probability of School Attendance: Model Specification and Parameters

The dependent variable, whether an individual attends school, is a dichotomous or binary variable (yes or no). There are two questions that we used to determine if one is attending school: *Is ... attending or enrolled in regular school? (Regular school includes elementary school and schooling which leads to a high school diploma or college, university or professional school degree.)*; and *Excluding regular college courses and on the job training is ... taking any business, vocational, technical, secretarial, trade, or correspondence courses?*

We used a probit model to estimate the effect of the predictor variables (income, education, race, ethnicity, gender, location, and age) on the probability of attending school. The data are pooled from 1996, 1997, and 1998 to bolster the state-level sample size. The number of observations for analysis of 18 to 44 year olds is 144,299 for the United States and 1,833 for Kentucky. The number of observations for the analysis of 15 to 24 year olds is 48,188 for the United States and 553 for Kentucky.

Income. The CPS does not report precise household family income. Rather, it is reported in 14 broad categories. We divided these 14 categories roughly into quartiles for the analysis. Since the data are pooled from three years, we transformed the data before pooling them. In our analysis the first quartile is omitted from the model and is the reference group. We also included a variable in the model, MISINC, if the income data are missing for a household.

Education. Educational attainment is collected for individuals 15 years old and older. There are 16 categories, which range from "less than 1st grade" to doctorate.

Race and Ethnicity. We use five variables to test the effect of race and ethnicity. They are a series of dichotomous variables: non-Hispanic Whites, non-Hispanic Blacks, Hispanics, Asians, and Native Americans. The variable "white" is left out of the model and is therefore the reference group.

Age. This variable is modeled as a continuous variable.

Gender. This variable is equal to 1 for males and 0 for females.

Location of residence. This is a dichotomous variable indicating whether the residence is in a metropolitan area. The variable (URBAN) is set to 1 if metropolitan and 0 if nonmetropolian.

The probit coefficients and standard errors[330] for the four models are presented in Table D.1.

TABLE D.1
Probability of Attending School, Probit Estimates

	18 to 44 years old		15 to 24 years old	
Variable	**KY**	**US**	**KY**	**US**
Intercept	-2.360 (0.829)***	-1.408 (0.015)***	3.480 (1.309)***	2.234 (0.129)***
Second income quartile	0.155 (0.133)	-0.102 (0.014)***	0.186 (0.181)	0.012 (0.019)
Third income quartile	0.182 (0.136)	-0.004 (0.013)	0.320 (0.197)*	0.212 (0.020)***
Top income quartile	0.323 (0.138)**	0.153 (0.014)***	0.676 (0.192)***	0.538 (0.021)***
Income not reported	0.342 (0.142)**	-0.014 (0.017)	0.304 (0.204)	0.128 (0.024)***
Educational attainment	0.088 (0.022)***	0.072 (0.002)***	0.067 (0.045)	0.140 (0.004)***
Hispanic	0.289 (0.325)	-0.125 (0.015)***	-0.010 (0.618)	-0.214 (0.021)***
Non-Hispanic Black	0.282 (0.133)**	0.012 (0.013)	0.211 (0.203)	-0.005 (0.020)
Native American	-5.604 (9970)	0.069 (0.047)	-7.562 (9222)	-0.067 (0.070)
Asian	-5.705 (10134)	0.206 (0.020)***	5.370 (16479)	0.435 (0.036)***
Age	-0.079 (0.006)***	-0.085 (0.001)***	-0.313 (0.035)***	-0.385 (0.004)***
Gender	-0.151 (0.081)*	-0.088 (0.009)***	-0.276 (0.124)**	-0.027 (0.014)**
Metropolitan	-0.183 (0.083)**	0.080 (0.012)***	0.066 (0.128)	0.102 (0.017)***

Significance: * = 10 percent ** = 5 percent *** = 1 percent
Note: Standard errors are in parentheses.

[330] The analyses were done using individual weights that approximately equal the inverse of the probability of being in the sample and normalized to add up to the sample size. This produces the correct standard errors.

Appendix E

Kentucky Retirement Survey: Background Information and Sample Characteristics

In the Fall of 1999 the Administrative Office of the Courts generated, from voter registration and driver's license lists, a random sample of Kentuckians born before January 1, 1955. Included in the sample were the names and addresses of 2,500 persons age 45 and older. The University of Kentucky Survey Research Center administered a 17-page, 69-question survey to these 2,500 individuals between February, 1, 2000 and February 4, 2000. The survey was closed on May 12, 2000, with 962 total completions included in the data. Among the responses, 313 were considered ineligible for various reasons and 1,225 recipients did not answer the survey. The response rate was 44.4 percent (962 divided by 2,187). Table E.1 shows some sample characteristics.

TABLE E.1
Kentuckians, Age 45 and Older, Sample Characteristics

	Variable	Frequency
AGE	Ages 45 to 55 years old	364
	Ages 56 to 65 years old	286
	Ages 66 to 75 years old	190
	Ages 75 years and older	100
	Ages 65 years and older	290
	Frequency Missing	22
RETIREMENT STATUS	Retired	431
	Not Retired	517
	Frequency Missing	14
GENDER	Female	494
	Male	454
	Frequency Missing	14
RACE	Black, African-American	38
	Hispanic, Latino	4
	White	893
	Other	9
	Frequency Missing	20
TOTAL HOUSEHOLD INCOME, 1999	Less than $15,000	182
	$15,000 to $30,000	229
	$30,001 to $50,000	191
	More than $50,000	275
	Frequency Missing	85

EDUCATION	Less Than High School	208
	High School Degree or Equivalent	339
	Some Postsecondary Education	219
	Bachelor's Degree or Better	185
	Frequency Missing	11
REGION	West	152
	South Central	151
	East	182
	Urban Triangle	465
	Frequency Missing	12

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